

**Community Development Block Grant Disaster Recovery Program (CDBG-DR)  
Owner Occupied Rehabilitation and Rebuilding Program (OORR)**

**62 MOREHOUSE HIGHWAY, FAIRFIELD, CT 06825**

**Addendum # 01  
November 18, 2014**

**GENERAL / CLARIFICATIONS**

- |   |  |
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| <b>Pre Bid Attendance List</b>            | See attached   |
| <b>Hazardous Materials Specifications</b> | See attached for omitted hazardous materials specifications                                    |
| <b>Hazardous Materials Clarifications</b> | See attached clarifications from Fuss & O'Neill  |
| <b>Concrete entry stairs</b>              | Repair of entry stairs is not in scope of work for the purpose of this bid                     |
| <b>Rear patio door Alt</b>                | Provide safety guardrail across exterior of door in the bid price for the patio door alternate |

**END OF ADDENDUM #1**



Quisenberry Arcari Architects, LLC  
318 Main Street  
Farmington, CT 06032

Project: 62 Morehouse Hwy. Fairfield, CT

Date: November 14, 10:00am

#	Contact Name & Company	Address	Phone & Fax	E-mail
1	Mike Nadolski DSW Homes, LLC	58 River Street Milford, CT	P: 203-693-276	<a href="mailto:Mike.nadolski@dswhomes.com">Mike.nadolski@dswhomes.com</a> <a href="mailto:John.danise@dswhomes.com">John.danise@dswhomes.com</a>
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3	Matt Willard Barton Construction	339 Washington Ave. North Haven, CT 06473	P: 203-234-2353 F: 203-234-0010	<a href="mailto:mwillard@bartonconstruction.com">mwillard@bartonconstruction.com</a>
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9	Kenneth Thomas Kenneth L. Thomas II, LLC	207 Mulberry St. Orange CT 06477	P: 203-414-4492	<a href="mailto:KennethLtlc@gmail.com">KennethLtlc@gmail.com</a>
10	Richard Shultz Abcon Environmental	205 Wallace St. New Haven, CT 06511	P: 203-776-7583 F: 203-776-7593	<a href="mailto:Rich@abconenvironmental.com">Rich@abconenvironmental.com</a>
11	Jim Quish Integrated Building Service	167 Cherry st #319 Milford, CT 06460	P: 203-243-9547 F: 888-874-1130	<a href="mailto:Jquish@ibsgreen.com">Jquish@ibsgreen.com</a>
12	Robert Warner Kenneth Warner & Sons, Inc.	65-3 N. Branford Road Branford, CT 06405	P: 203-982-3481 F: 203-481-5991	<a href="mailto:robertwarner@icloud.com">robertwarner@icloud.com</a>

**NOTE:** E-mail address listed should be for person responsible to receive direct communication regarding this project, specifically with regard to questions, procedures or bidding information.

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SECTION 028510 – MOLD REMEDIATION

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The project Contract documents, including any General Supplementary Conditions, apply to this Section.
- B. Limited Hazardous Materials Inspection Report May 2014.
- C. Hazardous Materials Abatement Drawings HM-01.

1.2 CONSULTANT

- A. The Owner may retain a Consultant for the purposes of project management and monitoring during lead abatement activities. The Consultant shall represent the Owner in all phases of the abatement project at the discretion of the Owner. The Contractor will regard the Consultant's direction as authoritative and binding as provided herein, in matters particularly but not limited to approval of work areas, review of monitoring results, completion of the various segments of work, final completion of the abatement, submission of data, and daily field punch list items.

1.3 USE OF CONTRACT DOCUMENTS

- A. It shall be incumbent upon the Contractor to visit the Site and determine what is existing, its condition, and what will be required to accomplish the Work intended by the Contract Documents. No increase in the Contract Sum will be permitted as a result of the Contractor's failure to visit the site and understand the existing conditions.
- B. All work shall comply with the Contract Documents and with applicable Codes, laws, regulations, and ordinances wherever applicable. The most stringent of all the foregoing shall govern.
- C. It is not intended that the Specifications show every detail of the Work, but the Contractor shall be required to furnish within the Contract Sum all material and labor necessary for the completion of the Work in accordance with the intent of the Specifications.
- D. In case of ambiguity among the Contract documents, the more stringent requirement as determined by the Consultant shall prevail.
- E. The Work of this Contract includes making modifications as necessary, subject to approval by Owner in consultation with the Consultant, to correct any conflicts.
- F. All items, not specifically mentioned in the Specifications but implied by trade practices to complete the work, shall be included.

1.4 EXAMINATION OF SITE

- A. It is understood that the Contractor has examined the Site and made his own estimates of the facilities and difficulties attending the execution of the Work, and has based his price thereon.
- B. Except for unforeseeable concealed conditions as determined by the Consultant, the Contractor shall make no claim for additional cost due to the existing conditions at the site.

1.5 CONTRACTUAL QUALIFICATIONS

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- A. All bidders shall submit a record of prior experience in similar projects, listing no less than three (3) completed jobs in the past year, with all projects of similar size and scope. The Contractor shall list the experience and training of the project foremen and all on-site personnel. The information that should be included is as follows:
  - 1. Project Name and Address
  - 2. Owner's Name and Address
  - 3. Architect/Consultant
  - 4. Contract Amount
  - 5. Date of Completion
  - 6. Extras and Changes
- B. Submit a written statement regarding whether the Contractor has ever been found out-of-compliance with federal or state asbestos and/or lead regulations pertaining to worker protection, removal, transport, or disposal.

**1.6 CONSTRUCTION PROGRESS SCHEDULE**

- A. To assure adequate planning and execution of the Work, and to assist the Consultant in appraising the reasonableness of the Contractor's applications for payment, the Contractor shall prepare and maintain a detailed Progress Schedule.
- B. Schedule of work of this Contract shall include the notification requirements to regulatory agencies for the work if exterior materials will become friable during proposed removal operations. It shall be incumbent upon the contractor performing the asbestos removal to determine if proposed removal methods shall render the asbestos containing exterior roofing materials friable.
- C. The Contractor shall supervise and direct all work of his and other trades using his best skill and attention. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the work under the Contract.
- D. Due to the nature of this construction work, the scheduling or phasing of work under this Contract may be adjusted by the Owner. As long as the Scope of Work is not altered, adjustments to the project phasing shall have no effect on the contract price.
- E. A pre-construction meeting shall be attended by the contractor and any sub-contractors. The assigned Supervisor must attend this meeting.

**1.7 TESTING LABORATORY SERVICES**

- A. The Contractor shall submit to the Consultant the name, address and qualifications of proposed laboratories intended to be utilized for sample analysis as required by this section.

**1.8 ADDITIONAL GENERAL REQUIREMENTS**

- A. The Contractor shall designate a Supervisor for the work to insure compliance with state and federal regulations. The Supervisor shall be the competent person as defined by OSHA regulations.
- B. The Contractor shall allow the work of this contract to be inspected if required by local, state, federal, and any other authorities having jurisdiction over such work. The Contractor shall immediately notify the Owner and Consultant and shall maintain written evidence of such inspection for review by the Owner and Consultant.
- C. The Contractor shall incur the cost of all fines resulting from regulatory non-compliance as issued by federal, state, and local agencies. The Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance or negligence.
- D. The Contractor shall immediately notify the Owner and Consultant of the delivery of all permits, licenses, certificates of inspection, of approval, or occupancy, etc., and any other such instruments required under codes

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by authorities having jurisdiction, regardless of to who issued, and shall cause them to be displayed to the Owner and Consultant for verification and recording.

**1.9 PROJECT SCOPE OF WORK**

- A. This Section includes requirements and procedures for cleaning of interior surfaces to remain, including visible mold contaminated surfaces.
- B. The work specified herein shall be the minimum requirements necessary to render the building dry and all surfaces within the area cleaned.
- C. The following material was determined to be mold contaminated and shall be removed by the Contractor:

<b>LOCATION</b>	<b>ABATEMENT ITEM</b>	<b>QUANTITY</b>
Finished Basement, Storage, and Utility Room	Sheetrock Walls	1,000 SF

- D. The Contractor shall be responsible for work area preparations, set-up, worker protection, demolition, disposal, removal, and cleaning of identified building areas and materials, as necessary.
- E. The Contractor shall be responsible for the following general requirements:
  - 1. Obtain and pay all associated fees for all approvals and permits, and submit all notifications required (these items are already in place due to other work currently in progress at the Site).
  - 2. Provide, erect, and maintain all containment work areas, barricades, and warning signs.
  - 3. Unless otherwise specified, all debris resulting from cleaning and necessary selective demolition shall become the property of the Contractor and shall be removed from the premises as regulator construction debris.
  - 4. Maintain a contained work area to eliminate building occupant exposures, and the spread of contamination to the unaffected areas of the building. Once materials have been removed from the building, the debris can be staged in a construction debris waste container for disposal as construction and demolition debris.
  - 5. Protect and preserve in operating condition, all utilities traversing the building and Site. Damage to any portion of the building due to work by the Contractor shall be repaired to the satisfaction of the Owner at no cost to the Owner.

**1.10 DEFINITIONS**

- A. The following definitions relative to asbestos abatement may apply:
  - 1. Accessible: A space easily accessed, and which can be entered or seen without performing demolition.
  - 2. Categories of Water: Categories of Water refer to the potential range of contamination in water, considering both the origination source and its quality after it contacts materials present at the job site. Categories as used in this Section include:
    - a. Category 1 – Water originating from a sanitary water source and does not pose substantial risk from dermal, ingestion or inhalation exposure. Examples include, but are not limited to: broken water supply pipe lines, melting ice or snow, falling rainwater, etc..
    - b. Category 2 – Water containing significant contamination, which has the potential to cause discomfort or sickness if contacted or consumed by humans and can contain potentially unsafe levels of microorganisms or nutrients for microorganisms, as well as other organic or inorganic matter (chemical or biological). Examples include, but are not limited to: discharge from dishwashers or washing machines, overflows from toilets, broken aquariums, or water beds, etc..
    - c. Category 3 - Water that is grossly contaminated, which can contain pathogenic, toxigenic, or other harmful agents. Examples include, but are not limited to: broken sewer or waste pipeslines, cesspools, holding tanks, wastewater, and leach fields, etc.
  - 3. Debris: Any solid materials, including particulate substances, on a surface not intended to be present.
  - 4. Demolition: The wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.

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5. Equilibrium Moisture Content (EMC): A recommended moisture content of wood, which is to be matched as close as practical to the expected moisture conditions of wood in service. The EMC shall be based on average conditions for both exterior and interior applications
6. Exposed: Open to view.
7. Fixed Object: A piece of equipment or furniture in the Work Area, which cannot be removed from the Work Area, as determined by the Owner.
8. High-Efficiency Particulate Air (HEPA): A type of filtering system capable of filtering out particles of 0.3 microns diameter from a body of air at 99.97% efficiency or greater
9. Inaccessible: A space not accessible, and which cannot be entered or seen without performing demolition.
10. Mechanical Cleaning: Physical removal of debris and other foreign matter from building surfaces.
11. Moveable Object: A piece of equipment or furniture in the Work Area, which can be removed from the Work Area.
12. Non-Porous Surface: Any surface of the building in contact with the air stream, which cannot be penetrated by either solutions or air. This would exclude materials such as wood, fiberboard, thermal insulation, and concrete.
13. Project Monitor: The trained or certified individual employed by the Owner's Representative contracted or employed by the building owner or contractor to supervise and/or conduct air monitoring and analysis. This individual is responsible for recognition of technical deficiencies in procedures during both planning and on-site phases of the project.
14. Visibly Clean: Determined by Visual Inspection, that all portions or components of the building are both 1) free of any visible mold growth, and 2) in the Contractor's professional judgment, capable meeting Cleaning Verification goals established herein.
15. Visual Inspection: Examination of the cleaned components of the building components to evaluate the effectiveness of the cleaning process using the human eye or another optical instrument.
16. Work Area: Specific area or location where the actual work is being performed, or such other area of a facility, which the Project Monitor determines to befall under the control of these Specifications.

#### 1.11 REFERENCES

- A. The current issue of each document referenced below shall govern the Work. Where conflict among requirements, or with these specifications or other project specifications exists, the more stringent requirements shall apply.
  1. Occupational Safety and Health Administration (OSHA):
    - a. 29 CFR 1910.134 – Respiratory Protection
    - b. 29 CFR 1926.21 – Safety Training and Education
    - c. 29 CFR 1926.32 – Definitions
    - d. 29 CFR 1926.51 – Sanitation
    - e. 29 CFR 1926.59 – Hazard Communication
    - f. 29 CFR 1926.200 – Accident Prevention Signs and Tags
    - g. 29 CFR 1926.417 – Lockout and Tagging of Circuits
  2. United States Environmental Protection Agency (EPA)
    - a. Building Air Quality, December 1991+
    - b. Guidance Document – “Mold Remediation in Schools and Commercial Buildings”
    - c. The Institute of Inspection Cleaning and Restoration Certification (IICRC)
    - d. Standard and Reference Guide for Professional Water Damage Restoration S500.
    - e. Standard and Reference Guide for Professional Mold Remediation” S520.
  3. American National Standards Institute (ANSI)
    - a. ANSI Z9.2 – Fundamentals Governing the Design and Operation of Local Exhaust Systems
    - b. ANSI Z88.2 – Respiratory Protection
  4. American Society of Testing and Materials (ASTM)
    - a. ASTM D4442 – Direct Moisture Content Measurements of Wood and Wood Based Materials
    - b. ASTM E 84 – Surface Burning Characteristic of Building Materials
    - c. ASTM E 119 – Fire Tests of Building and Construction Materials
    - d. ASTM F 710 “Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring”.
  5. Underwriters Laboratories, Inc. (UL)

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- a. UL 586 – High Efficiency, Particulate, Air Filter Units
- b. UL 181 – Factory-Made Air Ducts and Air Connectors
- c. UL 181A – Closure Systems for Use with Rigid Air Ducts and Air Connectors

**1.12 DOCUMENTATION**

- A. Submit two copies of the following documentation to ensure compliance with the applicable regulations. An up-to-date current copy shall be retained at the job site at all times.
- B. Manufacturer’s Catalog Data:
  - 1. Vacuum Equipment
  - 2. Respirators
  - 3. Polyethylene Sheeting
  - 4. Airless Sprayers
  - 5. Safety Data Sheet (SDS) for all materials delivered to the Site
  - 6. SDS for biocides to be used at the site
  - 7. Cleaning Chemicals
  - 8. Specialty In-Place Drying Equipment including, but not limited to; air scrubbers, desiccant or other de-humidifying equipment, hot air drying systems, air movers/fans, etc.
- C. Drawings (as applicable):
  - 1. Shop drawings to indicate details where proposed methods differ from details and layouts as may be necessary to comply with this Specification and all applicable regulations.
- D. Statements (as applicable):
  - 1. Worker Medical Certification
  - 2. Worker Training Certification
  - 3. Worker Respiratory Fit Testing
  - 4. Safety Plan
  - 5. Respirator Protection Plan
- E. Qualifications:
  - 1. The Contractor shall submit their record of experience in mold remediation and in- place drying, and provide references for verification.
  - 2. The Contractor shall provide information of a qualified supervisor that has had experience in mold remediation for approval .
  - 3. Establish and supervise in accordance with Title 29 CFR, Part 1926.21, a program for the education and training of workers in the recognition, avoidance, and prevention of unsafe conditions, and the regulations applicable to the work environment to control or eliminate any hazards or other exposure to illness or injury. Include any site specific information to address health and safety procedures unique to this project.
  - 4. Establish a written Respiratory Protection Plan in accordance with Title 29 CFR, Part 1910.134. This plan shall establish procedures governing the selection and use of respirators, and shall include such information as training in the proper use of respirators; medical examination of workers to determine whether or not they may be assigned an activity where respiratory protection is required; training in the proper use and limitations of respirators; respirator fit testing; regular inspection and evaluation of the continued effectiveness of the program; and other elements included in the standard.
- F. Records
  - 1. Records shall be maintained throughout the project to document activities performed these shall include at a minimum the following documents:
    - a. Sign-in/out Logs
    - b. Initial moisture measurement documentation
    - c. Daily humidity Records
    - d. During and Post drying moisture documentation

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- G. When rental equipment is to be used in the work, submit a copy of written notification provided to the rental company informing them of the nature of use of the rented equipment.

#### 1.13 DELIVERY, STORAGE, AND HANDLING

- A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description. Do not use damaged or deteriorating materials.

### PART 2 - PRODUCTS

#### 2.1 GENERAL

- A. Any substitution in materials, equipment, or methods to those specified shall be approved by the Owner prior to use. Any requests for substitution shall be provided in writing to the Owner. The request shall clearly state the rationale for the substitution.
- B. Submit to the Owner product data of all materials and equipment and samples of all materials to be considered as an alternate.
- C. Product data shall consist of manufacturer; catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, safety data sheets (SDS), and other standard descriptive data. Submittal data shall be clearly marked to identify pertinent materials, products or equipment and show performance characteristics and capacities.
- D. Samples shall be of sufficient size and quantity to clearly illustrate the functional characteristics of the product or material with integrally related parts and attachment devices.

#### 2.2 MATERIALS AND PRODUCTS

- A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.
- B. Damaged or deteriorating materials shall not be used and shall be removed from the premises.
- C. The Contractor shall have available sufficient inventory or dated purchase orders for materials necessary for the job including protective clothing, respirators, filter cartridges, polyethylene sheeting of proper size and thickness, tape, cleaning chemicals, and air filters.
- D. Materials
  1. Polyethylene sheet in a roll size to minimize the frequency of joints shall be delivered to job site with factory label indicating 6 mil.
  2. Polyethylene disposable bags shall be six mil. Tie wraps for bags shall be plastic, five inches long (minimum), pointed and looped to secure filled plastic bags.
  3. Tape or adhesive spray will be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.
  4. Impermeable containers are to be used to receive and retain any lead containing or contaminated materials until disposal at an acceptable disposal site. (The containers shall be labeled in accordance with EPA and DOT standards.)
  5. HEPA filtered exhaust systems shall be used during powered dust generating abatement operations. The use of powered equipment without HEPA exhausts is prohibited.
  6. Cleaning disinfectant, such as product manufactured by Fiberlock Technologies, Inc., IAQ 2500, or equivalent.
  7. Mold resistant coating such as Fiberlock Technologies, IAQ 6000, or equivalent.

#### 2.3 TOOLS AND EQUIPMENT

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- A. Tools and equipment shall be suitable for work specified.
- B. Air monitoring equipment shall be of the type and quantity required to monitor operations and conduct personnel exposure surveillance in accordance with OSHA requirements.
- C. Electrical equipment, protective devices and power cables shall conform to all applicable codes.
- D. Shower stalls and plumbing shall include sufficient hose length and drain system or an acceptable alternate. One shower stall shall be provided for each eight workers.
- E. Vacuum units, of suitable size and capabilities for the project, shall have HEPA filters capable of trapping and retaining at least 99.97 percent of all monodispersed particles of three micrometers in diameter or larger.
- F. Ladders and/or scaffolds shall be of adequate length, strength and sufficient quantity to support the work schedule. Scaffolds shall be equipped with safety rails and kick boards in compliance with OSHA requirements.
- G. For manual scraping activities, Contractor shall supply each worker with multiple newly sharpened scrapers on a daily basis.
- H. Sanders, grinders, wire brushes and needle gun removal equipment shall be equipped with a HEPA filtered vacuum dust pick-up system.
- I. Other materials such as lumber, nails and hardware necessary to construct and dismantle the decontamination enclosures and the barriers that isolate the work area shall be provided as appropriate for the work.
- J. Dehumidification Equipment such as conventional refrigerant dehumidifiers, low grain refrigerant (LGR) or high capacity desiccant dehumidifiers as deemed necessary based on conditions necessary to achieve in place drying as determined by Contractor and Project Monitor.
- K. Hot Air (Ventilated) Drying Systems utilized to increase temperature and ventilate space to lower relative humidity levels for enhanced drying operations as determined appropriate including for dense wood materials such as hardwoods.

### PART 3 - EXECUTION

#### 3.1 PRE-ABATEMENT MEETING

- A. Prior to the start of work a Pre-Construction Meeting will be scheduled and must be attended by the Contractor and any Sub-Contractors. The assigned Contractor Supervisor is also required to attend this meeting.
- B. A detailed project schedule and project submittals shall be presented by the Contractor at the Pre-Construction Meeting. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner and Consultant will inform the Contractor of any scheduling adjustments for this project.
- C. Following the Pre-Construction Meeting, the Contractor shall submit a revised schedule (if needed) no later than one week after the meeting. Upon approval by the Owner and Consultant, the Contractor will receive 'Notice To Proceed' with the work of the Contract.

#### 3.2 HEALTH AND SAFETY

- A. Safety Standards: Remediation Contractor shall comply with all applicable federal, state, and local requirements for protecting the safety of the Contractor's employees, building occupants, and the environment. In particular, all applicable standards of the OSHA shall be followed when working in accordance with this specification.

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- B. Occupant Safety: No processes or materials shall be employed in such a manner that they will introduce hazards into building spaces.
- C. Work Area Entry. Workers shall don personal protective equipment prior to entering work area, including respiratory protection, disposable coveralls, gloves, headgear, and footwear.
- D. Work Area Departure. While leaving respirators on, workers shall remove all gross contamination, debris, and dust from disposable coveralls and proceed to change room and remove coveralls and footwear and place in hazardous waste disposal container.
- E. Hand washing Facilities. All workers must wash their hands and faces upon leaving the work area.
- F. Equipment. All equipment used by workers inside the work area shall be wet wiped or bagged for later decontamination before removal from the work area.
- G. Prohibited Activities. Under no circumstances shall workers eat, drink, smoke, chew gum, or tobacco, or remove their respirators in the work area.
- H. Shock Hazards. The Contractor is responsible for using safe procedures to avoid electrical hazards. All temporary electrical wiring will be protected by ground fault circuit interrupters (GFI).

### 3.3 PERSONAL PROTECTION

- A. The Contractor shall have in place a Site-Specific Safety and Health Plan (SSHP), a Respiratory Protection Plan in accordance with the requirements of OSHA.
- B. Minimum Respirators include N95 rated respirators (half- face respirator) equipped with appropriate HEPA filter cartridge.
- C. Where spray applications of products will be used, a half-face or full-face air purifying respirator (APR) equipped with a HEPA filter cartridge shall be used. For spray applications in addition to HEPA filtration, a cartridge for vapor and gases should also be used (combination filter).
- D. Workers shall be provided with appropriate personal protective disposable clothing during spray application of disinfectants. Gloves and eye protection as required by manufacturer of disinfectants shall also be utilized.
- E. The Contractor shall ensure that all workers who may wear respiratory protection have undergone a medical examination and questionnaire to ensure that they can wear designated respiratory protective equipment.

### 3.4 GENERAL WORK AREA PREPARATION

- A. A Competent Person shall be on the job at all times to ensure the establishment of proper separation of the work area from occupied areas, and proper work practices are followed through project completion.
- B. Where necessary, shut down electrical power. Provide GFCI devices, temporary power, and temporary lighting installed in compliance with the applicable electrical codes. All installations are to be made by a Connecticut licensed electrician.
- C. Shut down and/or isolate heating, cooling, and ventilation air systems or zones to prevent contamination and fiber dispersal to other areas of the structure. During the work, vents around the work area shall be "criticaled" with duct tape and polyethylene sheeting.
- D. The Contractor shall establish the perimeter boundaries and containment limits for mold remediation work. During the work, the work area shall be demarcated to prevent entry by unauthorized personnel.

### 3.5 WORK AREA PREPARATION

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- A. The remediation containment and work procedures shall be as recommended by the EPA guidance document entitled “Mold Remediation in Schools and Commercial Buildings” and the IICRC entitled “Standard and Reference Guide for Professional Mold Remediation” S520.
- B. The work areas shall be established in accordance with the following categories per EPA guidelines as limited containment or S520 Category 1 based on conditions that will be remediated. Work Areas shall be prepared as follows.
  - 1. Limited containment per EPA guidance document entitled “Mold Remediation in Schools and Commercial Buildings”.
  - 2. Enclose the mold-containing area with a single layer of 6-mil, fire retardant poly-ethylene sheeting;
  - 3. Provide a double- flapped curtain doorway at entrance to the work area entrance using 6-mil polyethylene sheeting that is tightly sealed with duct tape. Flaps shall be mounted on contaminated side of room such that if negative pressure systems should cease to operate (such as power failure) flaps will close and restrict spread of contamination to unaffected areas.
  - 4. Contractor shall establish a full decontamination unit contiguous to the work area.
  - 5. Provide negative air filtration units (AFD) with HEPA filters vented directly to the exterior of the building to ensure that a minimum of 4 air changes per hour are maintained in the work area.
  - 6. For use of biocides or fungicide disinfectants, the Contractor shall strictly comply with manufacturer recommendations for use of these products including provisions for additional ventilation during use and methods to contain runoff during any spray applications.

### 3.6 CLEANING METHODOLOGY

- A. Source Removal Cleaning Methods: The buildings components to remain shall be cleaned by cleaning methods designed to extract contaminants from the building components and safely remove contaminants from the facility. It is the Contractor’s responsibility to select removal methods that will render the building components visibly clean and capable of passing cleaning verification methods and other specified tests, in accordance with all general requirements. No cleaning method, or combination of methods, shall be used which could potentially damage building components to remain.
  - 1. All methods used shall incorporate the use of vacuum collection devices that are operated continuously during cleaning. The vacuum collection device must be of sufficient power to render all areas being cleaned under negative pressure, such that containment of debris and the protection of the indoor environment are assured.
  - 2. All methods require damp wiping to dislodge debris adhered to building component surfaces, such that debris may be safely conveyed to damp cloths or vacuum collection devices.
- B. Mold Inhibitor Agents and Coatings:
  - 1. Mold Inhibitor Agents shall be applied, and shall receive prior approval by the Owner and Project Monitor. Mold Inhibitor agents will be applied only after removal of items required to be removed under selective demolition. Mold Inhibitor shall be applied to the surfaces remaining after removal of any mold damaged material.
  - 2. Application of any Mold Inhibitor Agents used to control the growth of fungal or bacteriological contaminants shall be performed after the removal of surface deposits and debris from surfaces.
  - 3. Only Mold Inhibitor Agents registered by the EPA specifically for use in buildings shall be used. Mold Inhibitor agents shall be clear.
  - 4. Mold Inhibitor Agents shall be applied in strict accordance with manufacturer’s instruction.
  - 5. Mold Inhibitor coating products for both porous and non-porous surfaces shall be EPA- registered, water soluble solutions with supporting efficacy data and SDS records.
  - 6. Mold Inhibitor coatings shall be applied according to manufacturer’s instructions. Coatings shall be sprayed directly onto surfaces, rather than “fogged” onto surfaces. A continuous film must be achieved on the surface to be treated by the coating application. Application of any Mold Inhibitor coatings shall be in strict accordance with manufacturer’s minimum millage surface application rate standards for effectiveness.

### 3.7 REMEDIATION PROCEDURES

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- A. There are presently no regulatory requirements with regard to mold remediation in the State of Connecticut. The project involves the removal of mold or mold contaminated building materials in accordance with standard practices and recommended procedures as detailed by the EPA and IICRC.
- B. The Contractor shall ensure that workers and other trade persons are notified of the nature of the work involving mold. Workers requesting respiratory protection must be afforded proper respiratory protection as recommended.
- C. The Contractor shall perform required remediation work involving demolition of interior finishes containing mold as described in this specification.
- D. Removal of Mold- Impacted Building Materials
  - 1. The following procedures shall be implemented for removal of mold -impacted building materials:
    - a. Once the area has been identified, selective demolition shall be performed to access and remove mold contaminated materials.
    - b. Mold contaminated materials shall be wet-misted during removal to control airborne dispersion of mold spores.
    - c. Materials with visible suspect mold shall be removed in large sections to the extent feasible to minimize disturbance.
    - d. Removed materials shall be transported from the basement to outside of the building through a contained area to prevent the airborne dispersion of mold spores.
    - e. Adjacent surfaces shall be vacuumed using HEPA vacuums and damp- wiped with water and detergent or disinfectant.
    - f. Surfaces damp wiped shall be visibly free of suspect mold and shall be immediately dried to discourage continued mold growth.
    - g. Surfaces remaining shall be coated with a an application of mold resistant coating such as "Fiberlock IAQ 6100" acrylic coating to prevent future mold growth, color white or as otherwise requested by the Owner.
    - h. All debris, dust, dirt and other materials shall be properly removed from the work area and properly containerized.
    - i. A visual inspection and post verification mold sampling shall be performed by the Project Monitor to confirm successful remediation.

### 3.8 MOLD CONTAMINATED WASTE

- A. Mold contaminated waste is considered construction debris and may be disposed with other construction/demolition-related debris.

### 3.9 FINAL VISUAL INSPECTION

- A. A final visual inspection of each work area shall be conducted by the Consultant to determine if remediation as detailed herein is complete.
- B. General: Verification of building component cleanliness will be determined after the cleaning and before the application of any treatment or introduction of any treatment-related substance to the building components, including mold inhibitor and coatings.
- C. Visual Inspection: The Consultant shall inspect the various building components visually to ensure that no visible contaminants are present.
  - 1. If visible contaminants are evident through visual inspection, the work area shall be re-cleaned and subjected to re-inspection for cleanliness.

END OF SECTION 028510

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SECTION 02 83 00 – LEAD ABATEMENT

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. The project Contract documents, including any General Supplementary Conditions, apply to this Section.
- B. Limited Hazardous Materials Inspection Report dated May 2014.
- C. Hazardous Materials Abatement Drawings HM-01, HM-02, and HM-03.

1.2 CONSULTANT

- A. The Owner may retain a Consultant for the purposes of project management and monitoring during lead abatement activities. The Consultant shall represent the Owner in all phases of the abatement project at the discretion of the Owner. The Contractor will regard the Consultant's direction as authoritative and binding as provided herein, in matters particularly but not limited to approval of work areas, review of monitoring results, completion of the various segments of work, final completion of the abatement, submission of data, and daily field punch list items.

1.3 USE OF CONTRACT DOCUMENTS

- A. It shall be incumbent upon the Contractor to visit the Site and determine what is existing, its condition, and what will be required to accomplish the Work intended by the Contract Documents. No increase in the Contract Sum will be permitted as a result of the Contractor's failure to visit the site and understand the existing conditions.
- B. All work shall comply with the Contract Documents and with applicable Codes, laws, regulations, and ordinances wherever applicable. The most stringent of all the foregoing shall govern.
- C. It is not intended that the Specifications show every detail of the Work, but the Contractor shall be required to furnish within the Contract Sum all material and labor necessary for the completion of the Work in accordance with the intent of the Specifications.
- D. In case of ambiguity among the Contract documents, the more stringent requirement as determined by the Consultant shall prevail.
- E. The Work of this Contract includes making modifications as necessary, subject to approval by Owner in consultation with the Consultant, to correct any conflicts.
- F. All items, not specifically mentioned in the Specifications but implied by trade practices to complete the work, shall be included.

1.4 EXAMINATION OF SITE

- A. It is understood that the Contractor has examined the Site and made his own estimates of the facilities and difficulties attending the execution of the Work, and has based his price thereon.
- B. Except for unforeseeable concealed conditions as determined by the Consultant, the Contractor shall make no claim for additional cost due to the existing conditions at the site.

1.5 CONTRACTUAL QUALIFICATIONS

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- A. All bidders shall submit a record of prior experience in similar projects, listing no less than three (3) completed jobs in the past year, with all projects of similar size and scope. The Contractor shall list the experience and training of the project foremen and all on-site personnel. The information that should be included is as follows:
  - 1. Project Name and Address
  - 2. Owner's Name and Address
  - 3. Architect/Consultant
  - 4. Contract Amount
  - 5. Date of Completion
  - 6. Extras and Changes
- B. Submit a written statement regarding whether the Contractor has ever been found out-of-compliance with federal or state asbestos and/or lead regulations pertaining to worker protection, removal, transport, or disposal.
- C. The Contractor shall be a United States Environmental Protection Agency (EPA) Certified Lead-Safe Renovator in accordance with the EPA Lead Renovation, Repair, and Painting Rule (RRP Rule). **All workers and supervisors** shall have completed 8 hours of training and received certification as lead safe renovators. This is a requirement of the U.S. Department of Housing and Urban Development (HUD) regulation 24 CFR Part 35.

1.6 CONSTRUCTION PROGRESS SCHEDULE

- A. To assure adequate planning and execution of the Work, and to assist the Consultant in appraising the reasonableness of the Contractor's applications for payment, the Contractor shall prepare and maintain a detailed Progress Schedule.
- B. Schedule of work of this Contract shall include the notification requirements to regulatory agencies for the work if exterior materials will become friable during proposed removal operations. It shall be incumbent upon the contractor performing the asbestos removal to determine if proposed removal methods shall render the asbestos containing exterior roofing materials friable.
- C. The Contractor shall supervise and direct all work of his and other trades using his best skill and attention. The Contractor shall be solely responsible for all construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the work under the Contract.
- D. Due to the nature of this construction work, the scheduling or phasing of work under this Contract may be adjusted by the Owner. As long as the Scope of Work is not altered, adjustments to the project phasing shall have no effect on the contract price.
- E. A pre-construction meeting shall be attended by the contractor and any sub-contractors. The assigned Supervisor must attend this meeting.

1.7 TESTING LABORATORY SERVICES

- A. The Contractor shall submit to the Consultant the name, address and qualifications of proposed laboratories intended to be utilized for sample analysis as required by this section.

1.8 ADDITIONAL GENERAL REQUIREMENTS

- A. The Contractor shall designate a Supervisor for the work to insure compliance with state and federal regulations. The Supervisor shall be the competent person as defined by OSHA regulations.
- B. The Contractor shall allow the work of this contract to be inspected if required by local, state, federal, and any other authorities having jurisdiction over such work. The Contractor shall immediately notify the Owner and Consultant and shall maintain written evidence of such inspection for review by the Owner and Consultant.

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- C. The Contractor shall incur the cost of all fines resulting from regulatory non-compliance as issued by federal, state, and local agencies. The Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance or negligence.
- D. The Contractor shall immediately notify the Owner and Consultant of the delivery of all permits, licenses, certificates of inspection, of approval, or occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless of to who issued, and shall cause them to be displayed to the Owner and Consultant for verification and recording.

**1.9 PROJECT SCOPE OF WORK**

- A. Work outlined in this Section includes all work necessary for the abatement of lead hazards including; lead paint hazards and lead dust hazards. Work shall be performed in compliance with United States Environmental Protection Agency (EPA) Renovation, Repair, and Painting (RRP) regulations and Housing and Urban Development (HUD) Lead Safe Work Practices. Work is to be performed at 62 Morehouse Highway in Fairfield, Connecticut. The property is considered Target Housing, however is not currently occupied by a child under the age of six and CT Regulations 19a-111 do not apply.
- B. Responsibilities of Lead-Safe Renovation Contractors: The responsible party of the Lead-Safe Renovation Contractor or other entity conducting renovation work shall ensure the following:
  - 1. All persons performing renovation work are responsible persons or employees of the Lead-Safe Renovation Contractors.
  - 2. A person who is Certified as a Lead-Safe Renovator Supervisor or a licensed Lead Abatement Supervisor hereinafter referred to as Supervisor shall be assigned to the project for each contractor performing renovation work where lead paint is to be disturbed and be on site at all times during Lead-Safe Renovation Work.
  - 3. All workers performing Lead-Safe Renovation shall be Certified as Lead-Safe Renovator Supervisors or have received requisite training as required by HUD regulations
  - 4. Prior to the start of work the Lead-Safe Renovation Contractor shall ensure pre-renovation notification requirements for providing EPA Pamphlet are adhered to.
  - 5. The Lead Safe Renovation Contractor and Supervisor shall ensure that lead safe work practice requirements are utilized in accordance with RRP and HUD regulations
  - 6. The required record keeping documentation of the Lead-Safe Renovation work shall be maintained as required.
- C. Responsibilities of Lead-Safe Renovation Supervisors: The responsible party of the Lead-Safe Renovation Contractor shall ensure the following:
  - 1. The Supervisor shall be assigned to the project for each contractor performing renovation work where lead paint is to be disturbed and be on site at all times during Lead-Safe Renovation Work.
  - 2. The Lead Safe Renovation Supervisor shall oversee and ensure that lead safe work practice requirements are utilized in accordance RRP and HUD regulations.
  - 3. Upon the completion of work conduct the required visual clearance inspection and cleaning verification as required. It should be noted that HUD regulations will require the collection of lead dust wipe samples to verify adherence to clearance requirements specified herein.
- D. The following table summarizes the lead based paint identified requiring removal and proper disposal as hazardous lead waste:

<b>LOCATION</b>	<b>ABATEMENT ITEM</b>	<b>QUANTITY</b>
Throughout Residence	Exterior and Interior Window Sashes and Interior Window Trim and Sill	Complete Component Removal of 32 Window Sashes and Interior Window Trim and Sill from 16 Windows. Replacement by Others.

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<b>LOCATION</b>	<b>ABATEMENT ITEM</b>	<b>QUANTITY</b>
Basement Storage	Paint on Concrete Block Walls and Interior Door and Casing	Complete Component Removal of Interior Door and Casing from 1 Door. Replacement by Others.  Removal of Paint from 500 SF of Concrete Block Walls.  Floors to Be Washed with TSP and HEPA Vacuumed Following Abatement
First Floor Living Room, 3 Season Porch, and Bedroom 1	Interior Door and Casing	Complete Component Removal of Interior Door and Casing from 3 Doors. Replacement by Others  Floors to Be Washed with TSP and HEPA Vacuumed Following Abatement
3 Season Porch	Wood Ceiling	Complete Component Removal of Wood Ceiling. Replacement by Others.  Floors to Be Washed with TSP and HEPA Vacuumed Following Abatement

- E. The following table summarizes the exterior defective lead based paint identified requiring scrapping of the defective lead based paint and proper disposal as hazardous lead waste:

<b>LOCATION</b>	<b>ABATEMENT ITEM</b>	<b>QUANTITY</b>
Throughout Residence	Upper Trim	250 LF of Paint Shall be Scraped to Remove Loose and Flaking Paint and Stabilize Paint for Re-Painting.
	Exterior Window Trim	16 Window Openings Shall be Scraped to Remove Loose and Flaking Paint and Stabilize Paint for Re-Painting
Exterior Porch	Metal Porch Ceiling	100 SF of Paint Shall be Scraped to Remove Loose and Flaking Paint and Stabilize Paint for Re-Painting
Exterior Garage	Exterior Window Blind stops	3 Window Openings Shall be Scraped to Remove Loose and Flaking Pant and Stabilize Paint for Re-Painting

- F. The Contractor is responsible for verifying the quantities of materials to be removed, and the condition of these materials. Waste generated during all work activities shall be presumed hazardous waste for disposal and properly disposed.

**1.10 DEFINITIONS**

- A. The following definitions relative to asbestos abatement may apply:
1. Abatement - A measure or set of measures designed to permanently eliminate lead based paint hazards or lead-based paint. Abatement strategies include the removal of lead-based paint, enclosure,

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- encapsulation, replacement of building components coated with lead-based paint, removal of lead-contaminated dust, and removal of lead-contaminated soil or overlaying soil with a durable covering such as asphalt.
2. Action Level - Employee exposure, without regard to the use of respirators, to an airborne concentration of lead of 30 micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) calculated as an eight hour time weighted average.
  3. Abrasive Removal - A method of abatement that entails the removal of lead-based paint using mechanical removal equipment fitted with a high efficiency particulate air (HEPA) dust collection system.
  4. Atomic Absorption Spectrophotometer (AA) - An instrument which measures the lead content in parts per million (ppm) using a lead source lamp and a flame capable of measuring the absorbed energy and converting it to concentration.
  5. Biological Monitoring - The analysis of a person's blood to determine the level of lead contamination in the body.
  6. Certified Renovator – An individual who is approved to carry out remodeling work practices described in the terms of the Lead, Renovation, Repair, & Painting (RRP) rule issued by the United States Environmental Protection Agency on April 22, 2008.
  7. Chemical Removal - A method of abatement which entails the removal of lead-based paint using caustic or solvent based chemical paint strippers.
  8. Child-Occupied Facility: A building or a portion of a building, constructed prior to 1978, and visited by the same child of less than six years of age on at least two different days within any week (Sunday through Saturday), provided that each day's visit lasts at least three hours and the combined weekly visits last at least six hours, and the combined annual visits last at least 60 hours. Child-Occupied Facilities may be located in target housing or in public or commercial buildings. With respect to common areas in public or commercial buildings that contain Child-Occupied Facilities, the Child-Occupied Facility encompasses only the exterior sides of the building that are immediately adjacent to the Child-Occupied Facility.
  9. Cleaning Verification Card: A card developed and distributed, or otherwise approved by EPA for the purpose of determining, through comparison of wet and dry disposable cleaning cloths with the card, whether post-renovation cleaning has been adequately completed.
  9. Competent Person - An individual who is capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.
  10. Complete Abatement - Abatement of all lead-based paint inside or outside a dwelling or building and reduction of any lead-contaminated dust or soil hazards. All of these strategies require preparation; cleanup; post abatement clearance testing; record keeping; and, if applicable, reevaluation and on-going monitoring.
  11. Deteriorated Paint - Paint that is peeling, flaking, chalking, scaling, or chipping ; paint that is over a defective or deteriorated substrate; or paint that is damaged in any manner such that a child can get paint from the damaged area. Deteriorated paint shall be classified as either in fair condition or poor condition.
  12. Elevated blood lead level - A blood lead concentration as defined in Regulations of the State of Connecticut. A blood lead concentration equal to or greater than forty (40) micrograms per deciliter ( $\mu\text{g}/\text{dl}$ ) as defined in OSHA Standard 1926.62.
  13. Encapsulation - The resurfacing or covering of surfaces, and sealing or caulking with durable materials so as to prevent or control chalking or flaking of substances containing lead-based paint.
  14. Enclosure - The use of rigid, durable construction materials that are mechanically fastened to the substrate to act as a barrier between the lead-based paint and the environment.
  15. Engineering Controls - Measures implemented at the work site to contain, control, and/or otherwise reduce worker exposure to, and environmental releases of lead dust and debris.
  16. Evaluation - Risk assessment, paint inspection, reevaluation, investigation, clearance examination, or risk assessment screen.
  17. Fixed Object - A unit of equipment or furniture in the work area which cannot, as determined by the State, be removed from the work area.
  18. Hazardous Waste: As defined in the Resource Conservation and Recovery Act (RCRA) the term "hazardous waste" means a solid waste, or combination of solid wastes, which because of its quantity; concentration; or physical, chemical, or infectious characteristics may cause, or significantly contribute to increases in mortality, increase in serious and irreversible or incapacitating but reversible illness, or pose a substantial present or potential hazard to human health or the environment when improperly

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treated, stored, transported, or disposed. As defined in the regulations, solid waste is hazardous if it meets one of four conditions:

- a. Exhibits a characteristic of a hazardous waste (40 CFR Sections 261.20 through 262.24),
  - b. Has been listed as hazardous (40 CFR Section 261.31 through 261.33),
  - c. Is a mixture containing a listed hazardous waste and a non-hazardous solid waste (unless the mixture is specifically excluded or no longer exhibits any of the characteristics of hazardous waste), or
  - d. Is not excluded from regulation as a hazardous waste.
19. Inspection - A surface-by surface investigation to determine the presence of lead-based paint (in some cases including dust and soil sampling) and a report of the results.
  20. Inspector - An individual who meets the licensing and certification requirements of the State of Connecticut, Department of Public Health, Sections 20-478-1 through 20-478-3 to (1) perform inspections to determine and report the presence of lead-based paint on a surface-by-surface basis through on-site testing, (2) report the findings of such an inspection, (3) collect environmental samples for laboratory analysis, (4) perform clearance testing, and (5) document successful compliance with lead-based paint hazard control requirements or standards.
  21. Intact Surface - A defect-free surface with no loose, peeling, chipping, or flaking paint. Painted surfaces must be free from crumbling, cracking or falling plaster and must not have holes in them. Intact surfaces must not be damaged in any way.
  22. Interim Controls - A set of measures designed to temporarily reduce human exposure or possible exposure to lead-based paint hazards. Such measures include specialized cleaning, repairs, maintenance painting, temporary containment, and management and resident education programs. Interim controls also include dust removal; paint film stabilization; treatment of friction and impact surfaces; installation of soil coverings, such as grass or sod; and land-use controls.
  23. Lead Abatement Plan - A written plan that identifies the location of intact and defective lead-based paint and describes how defective lead-based surfaces will be abated and how the environment, health, and safety will be protected.
  24. Lead-Based Paint - Paint or other surface coatings that contain lead equal to or greater than 1.0 milligrams of lead per square centimeter or greater than 0.5% by weight.
  25. Lead-Based Paint Hazard - Any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, or deteriorated lead-based paint would have an adverse effect on human health. Lead-based paint hazards include for example, deteriorated lead-based paint, leaded dust levels above applicable standards, and bare leaded soil above applicable standards.
  26. Lead-Based Paint Hazard Control - Activities to control and eliminate lead-based paint hazards, including interim controls, abatement, and complete abatement.
  27. Lead-Based Paint Abatement Planner/ Designer - An individual who meets the licensing and certification requirements of the State of Connecticut, Department of Public Health, Sections 20-478-1 through 20-478-3 for planning and designing lead-based paint abatement projects.
  28. Lead Consultant - An individual who meets the licensing and certification requirements of the State of Connecticut, Department of Public Health, Sections 20-478-1 through 20-478-3 to perform as an inspector, risk assessor or planner/designer
  29. Lead Control Area - An area where lead abatement operations are performed where airborne concentrations of lead dust exceed or can reasonably be expected to exceed the permissible exposure limit. The lead control area is isolated by physical boundaries from occupied areas to prevent the spread of lead dust, paint chips, debris, and unauthorized entry of personnel.
  30. Lead-Free Dwelling - A lead-free dwelling contains no lead-based painted surfaces and has interior dust and exterior soil lead levels below the applicable CT DPH, HUD and EPA standards.
  31. Lead Hazard Screen - A means of determining whether residences in good condition should have a full risk assessment. Also called a risk assessment screen.
  32. Lead-Safe Dwelling - A lead-safe dwelling contains intact, or encapsulated lead-based paint and has interior dust and exterior soil lead levels below the applicable CT DPH, HUD and EPA standards.
  33. Manifest - The shipping document (EPA Form 8700-22 or a comparable form required by the State or locality) used for identifying the quantity, composition, origin, routing, and destination of hazardous waste during its transport from the point of generation to the point of treatment, storage, or disposal.
  34. Paint Film Stabilization - The process of wet scraping, priming, and repainting surfaces coated with deteriorated lead-based paint; paint film stabilization includes cleanup and clearance.

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35. Paint Removal - An abatement strategy that entails the removal of lead-based paint from surfaces. For lead hazard control work, this can mean using chemicals, heat guns below 700 degrees Fahrenheit, and certain contained abrasive methods. Open flame burning, open abrasive blasting, sand blasting, water blasting and extensive dry scraping are prohibited paint removal methods.
36. Permissible Exposure Limit (PEL) - Fifty (50) micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) of air averaged over an 8 hour period as determined by 29 CFR 1926.62.
37. Personal Monitoring - Sampling of lead concentrations within the breathing zone of a worker to determine the 8-hour time weighted average concentration in accordance with 29 CFR 1926.62. Samples shall be representative of the employee's work tasks.
38. Reevaluation - In lead hazard control work the combination of a visual assessment, and collection of environmental samples performed by a certified risk assessor to determine if a previously implemented lead-based paint hazard control measure is still effective and if the dwelling remains lead-safe.
39. Replacement - A strategy of abatement that entails removing components such as windows, doors, and trim that have lead painted surfaces and installing new or de-lead components free of lead-based paint.
40. Risk Assessment - An on-site investigation of a residential dwelling to discover any lead-based paint hazards. Risk assessments include an investigation of the age, history, management, and maintenance of the dwelling, and the number of children under age 6 and women of childbearing age who are residents; a visual assessment; limited environmental sampling (i.e., collection of dust wipe samples, soil samples, and deteriorated paint samples); and preparation of a report identifying acceptable abatement and interim control strategies based on specific conditions.
41. Risk Assessment Screen - A type of risk assessment performed only in buildings in good condition using fewer samples but more stringent evaluation criteria (standards) to determine lead hazards.
42. Risk Assessor - An individual who meets the licensing and certification requirements of the State of Connecticut, Department of Public Health Sections 20-478-1 through 20-478-3 to (1) perform risk assessments, (2) identify acceptable abatement and interim control strategies for reducing identified lead-based paint hazards, (3) perform clearance testing and reevaluations, and (4) document the successful completion of lead-based paint hazard control activities.
43. Target Housing: Any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless a child under the age of six resides or is expected to reside in such housing) and any zero-bedroom dwelling.
44. Toxicity Characteristic Leaching Procedure (TCLP) - Toxicity characteristic leaching procedure utilizing EPA Test method SW-846, Method 1311 to determine whether waste can be classified as hazardous or construction waste for disposal purposes.
45. Visible Residue - Any paint debris, dust, or chips on surfaces within the work area where lead abatement has taken place and which is visible to the unaided eye.
46. Wet Cleaning - The process of eliminating lead dust and chip contamination from surfaces by using cloths, mops, or other cleaning tools which have been dampened with water and afterwards disposing of the cleaning items as hazardous lead waste.
47. Wipe Test - A test used to determine the concentration of lead particles; used to determine whether clearance levels for lead abatement have been achieved. A wipe test assimilates the dust from a measured surface area of about one square foot and is laboratory analyzed to determine the quantity of lead contained in that area.
48. X-ray Fluorescence (XRF) Analyzer - An analytical instrument which measures lead concentration of dried paint on surfaces or in a laboratory sample in milligrams per square centimeter ( $\text{mg}/\text{cm}^2$ ) using a radioactive source within the instrument. There are two types of XRF-analyzers commonly available which require distinct and different testing protocols - "direct read" and "spectrum analyzer".

#### 1.11 SUBMITTALS

- A. The Contractor shall submit the following prior to the pre-construction meeting:
  1. Submit a schedule to the Owner and the Consultant that defines a timetable for executing and completing the project, including set-up, removal, cleanup, decontamination, and disposal.
  2. Submit the identity of the hauling contractor and location of the landfill to be used for disposal of hazardous lead waste.

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3. Submit the plans and construction details for the construction of the decontamination enclosure systems and the isolation of the work areas as may be necessary for compliance with this specification and applicable regulations.
  4. Submit the training and medical records of each employee who may be on the project site exposed to lead.
  5. Submit the qualifications of the laboratory who the Contractor proposes to use to analyze personal air samples for OSHA employee exposure monitoring if applicable.
  6. Submit detailed product information on all materials and equipment proposed for lead abatement work on this project.
  7. Submit pertinent information regarding the qualifications of the Project Supervisor (competent person) for this project as well as a list of past projects completed.
- B. The following shall be submitted to the Owner during the work:
1. Results of personal air sampling
  2. Training and medical records for new employees to start work (24 hours in advance)
- C. The following shall be submitted to the Owner at the completion of work:
1. Copies of all air sampling results
  2. Contractor logs
  3. Completed, signed copies of waste manifest records

#### 1.12 REGULATIONS AND STANDARDS

- A. The Contractor shall be solely responsible for conducting this project and supervising all work in a manner which will be in conformance with all federal, state, and local regulations and guidelines pertaining to lead abatement. Specifically, the Contractor shall comply with the requirements of the following:
1. State of Connecticut, Department of Energy and Environmental Protection (CTDEEP)
    - a. Section 22a-209-1 through 22a-209-16 - Solid Waste Management Regulations.
    - b. Section 22a-449(c)-100 through 22a-449(c) 110 and 22a-449(c)-11 - Hazardous Waste Management Regulations.
  2. Occupational Safety and Health Administration (OSHA)
    - a. 24 CFR 35 - Lead Based Paint Poisoning Prevention.
    - b. 29 CFR 1910.134 - Respiratory Protection.
    - c. 29 CFR 1910.146 - Permit-Required Confined Spaces.
    - d. 29 CFR 1926.21 - Safety Training.
    - e. 29 CFR 1926.28 - Personal Protective Equipment.
    - f. 29 CFR 1926.55 - Gases, Vapors, Fumes, Dusts, and Mists.
    - g. 29 CFR 1926.57 - Ventilation.
    - h. 29 CFR 1926.59 - Hazard Communication.
    - i. 29 CFR 1926.62 - Lead.
    - j. 29 CFR 1926.103 - Respiratory Protection.
  3. Environmental Protection Agency (EPA)
    - a. 40 CFR 260 - Hazardous Waste Management Systems: General.
    - b. 40 CFR 261 - Identification and Listing of Hazardous Waste.
    - c. 40 CFR 262 - Generators of Hazardous Waste.
    - d. 40 CFR 263 - Transporters of Hazardous Waste
    - e. 40 CFR 264 - Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
    - f. 40 CFR 265 - Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
    - g. 40 CFR 268 - Land Disposal Restrictions
    - h. 40 CFR 745 - Subpart F - Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards Upon Sale or Lease of Residential Property.
    - i. 40 CFR 745 - Subpart L - Lead-Based Paint Activities.
    - j. 40 CFR 745 - Subpart Q - State and Indian Tribal Programs.
    - k. 40 CFR 745.80-92 – Renovation, Repair, and Painting Rule (RRP Rule)

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4. Department of Transportation (DOT)
  - a. 49 CFR 172 - Hazardous Materials Tables and Hazardous Materials Communications Regulations
  - b. 49 CFR 178 - Shipping Container Specification
5. Department of Housing and Urban Development (HUD)
  - a. 24 CFR 35 – Subpart B-R – Lead Safe Housing Rule

1.13 QUALITY ASSURANCE

- A. Hazard Communication Program
  1. The Contractor shall establish and implement a Hazard Communication Program as required by 29 CFR 1926.59.
- B. Compliance Plan (Site Specific)
  1. The contractor shall establish a written compliance plan, which is specific to the project site, to include the following:
    - a. A description of work activity involving lead including equipment used, material included, controls in place, crew size, employee job responsibilities, operating procedures, and maintenance practices.
    - b. Methods of engineering controls to be used to control lead exposure.
    - c. The proposed technology the Contractor will implement in meeting the PEL.
    - d. Air monitoring data documenting the source of lead emissions.
    - e. A detailed schedule for implementing the program, including documentation of appropriate supply of equipment, etc.
    - f. Proposed work practice which establishes proper protective work clothing, housekeeping methods, hygiene facilities, and practices.
    - g. Worker rotation schedule, if proposed, to reduce TWA.
    - h. A description of methods for informing workers of potential lead exposure.
- C. Hazardous Waste Management
  1. The Contractor shall establish a Hazardous Waste Management Plan, which shall comply with applicable regulations and address the following:
    - a. Identification of hazardous wastes
    - b. Estimated quantity of waste to be disposed of
    - c. Names and qualifications of each sub-contractor that will be transporting, storing, treating, and disposing of wastes
    - d. Disposal facility location and 24 hour point of contact
    - e. Establish EPA state hazardous waste and identification numbers if applicable
    - f. Names and qualifications (experience and training) of personnel who will be working on site with hazardous wastes
    - g. List of waste handling equipment to be used in performing the work to include cleaning, volume reduction, if applicable, and transport equipment
    - h. Qualifications of laboratory to be utilized for TCLP sampling and analysis
    - i. Spill prevention, containment, and cleanup contingency measures
    - j. Work plan and schedule for waste containment, removal, treatment, and disposal
- D. Medical Examinations
  1. Before exposure to lead contaminated dust, provide workers with a comprehensive medical examination as required by 29 CFR 1910.1025 and 29 CFR 1926.62.
  2. The examination shall not be required if adequate records show that employees have been examined as required by 29 CFR 1926.62 within the last year.
  3. Medical examination shall include, at a minimum, approval to wear respiratory protection and biological monitoring.

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E. Training

1. The Contractor shall ensure that workers are trained to perform lead paint disturbing activities and disposal operations prior to the start of work in accordance with OSHA Lead in Construction 29 CFR 1926.62 regulations.
2. The Contractor shall ensure that **all** workers are trained to perform lead paint disturbing activities and disposal operations prior to the start of work in accordance with HUD Lead Safe Housing Rule 24 CFR 35 Subpart B-R. The following training courses meet this requirement:
  - a. HUD/EPA course "Work Smart, Work Wet, and Work Clean to Work Lead Safe" (8 hours) with current RRP refresher.
  - b. HUD/NARI course "The Remodeler's and Renovator's Lead Based Paint Training Program" (8 hours). with current RRP refresher.
  - c. HUD "Lead Safe Work Practices" (8 hours) with current RRP refresher.
  - d. EPA RRP Lead Safe Renovator training (8 hours)
3. The Contractor shall ensure that a "Certified Renovator" be assigned to the project as required by EPA RRP Rule 40 CFR 745.80-92.

F. Respiratory Protection Program

1. The Contractor shall furnish each employee required to wear a negative pressure respirator with a respirator fit test at the time of initial fitting and at least once every six (6) months thereafter as required by 29 CFR 1926.62.
2. The Contractor shall establish a Respiratory Protection Program in accordance with ANSI Z88.2, 29 CFR 1910.134, and 29 CFR 1926.62.

1.14 SUBMITTALS

- A. The Contractor shall submit to the Owner the following submittals prior to start of work:
1. Copies of medical records for each employee to be used on the project, including results of biological monitoring and a notarized statement by the examining physician that such an examination took place.
  2. Copies of workers' training certificates.
  3. Submit record of successful respirator fit testing performed by a qualified individual within the previous six months, for each employee to be used on this project with the employee's name and social security number with each record.
  4. The name and address of Contractor's blood lead testing lab, OSHA CDC listing, and Certification in the State of Connecticut.
  5. The name and address of Contractor's personal air monitoring and waste disposal lead testing laboratory/ies.
  6. Name, address, and ID number of the hazardous waste hauler, waste transfer route, and proposed disposal site.
- B. The Contractor shall submit to the Owner the following submittals during the job:
1. Results from personal air samples.
  2. Medicals, certificates, and fit test 24 hours in advance of any new employee starting on the project.
- C. The Contractor shall submit to the Owner the following submittals upon completion of the work:
1. Copies of manifests and receipts acknowledging disposal of all hazardous waste material from the project showing delivery date, quantity, and appropriate signature of landfill's authorized representative.

1.7 PERSONAL PROTECTION

A. Exposure Assessment

1. The Contractor shall determine if any worker will be exposed to lead at or above the action level.
2. The exposure assessment shall identify the level of exposure a worker would be subjected to without respiratory protection.

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3. The exposure assessment shall be achieved by obtaining personal monitoring samples representative of a full shift at least (8 hour time weighted average (TWA)).
4. During the period of the exposure assessment, the Contractor shall institute the following procedures for protection of workers.
  - a. Protective clothing shall be utilized
  - b. Respiratory protection
  - c. Change areas shall be provided
  - d. Hand washing facilities and shower
  - e. Biological monitoring
  - f. Training of workers

**B. Respiratory Protection**

1. The Contractor shall furnish appropriate respirators approved by NIOSH/MSHA for use in atmospheres containing lead dust.
2. Respirators shall comply with the requirements of 29 CFR 1926.62.
3. Workers shall be instructed in all aspects of respiratory protection.
4. The Contractor shall have an adequate supply of HEPA filter elements and spare parts on site for all types of respirators in use.
5. The following minimum respirator protection for use during paint removal or demolition of components and surfaces with lead paint shall be the 1/2 mask air purifying respirator with high efficiency filters for exposures (not in excess of 500 ug/m<sup>3</sup> or 10 x PEL).

**C. Protective Clothing**

1. Personal protective clothing shall be provided for all workers, supervisors, and authorized visitors entering the work area.
2. Each worker shall be provided with a minimum of two complete disposable coverall suits.
3. Removal workers shall not be limited to two (2) suits, and the Contractor shall supply additional suits as necessary.
4. Under no circumstances shall anyone entering the abatement area be allowed to re-use a contaminated disposable suit.
5. Disposable suits, such as TYVEK suits, and other personal protective equipment (PPE) shall be donned prior to entering the lead control area. A change room shall be provided for workers to put on suits and other personal protective equipment with separate areas to store their street clothes.
6. Eye protection for personnel engaged in lead operations shall be furnished when the use of a full-face respirator is not required.
7. Goggles with side shields shall be worn when working with power tools or a material that may splash or fragment, or if protective eye wear is specified on the Safety Data Sheet (SDS) for a particular product to be used on the project.

**1.8 PERSONAL MONITORING**

- A. General. The Contractor is required to perform the personal air sampling activities during lead paint disturbing work. The results of such sampling shall be posted, provided to individual workers and submitted to the Owner as described herein.
- B. Sampling. Samples shall be taken for the duration of the work shift or for eight hours, whichever is less. Personal samples need not be taken every day after the first day if working conditions remain unchanged, but must be taken every time there is a change in removal operations, either in terms of the location or the type of work. Sampling will be used to determine eight hour Time weighted averages (TWA). The Contractor is responsible for personal sampling as outlined in OSHA Standard 29 CFR 1926.62 and 29 CFR 1910.1025.
- C. Sampling Results. Air sampling results shall be reported to individual workers in written form no more than 48 hours after the completion of a sampling cycle. The reporting document shall list each sample's result, sampling time and date, personnel monitored and their social security numbers, flow rate, sample duration, sample yield,

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cassette size, and analysts' name and company, and shall include an interpretation of the results. Air sample analysis results will be reported in micrograms/cubic meter ( $\mu\text{g}/\text{m}^3$ ).

- D. Testing Laboratory. The Contractor's testing lab shall be participating in AIHA's Environmental Lead Laboratory Accreditation Program (ELLAP). The Contractor shall submit to the Consultant for review and acceptance, the name and address of the laboratory, certification(s) of AIHA participation, a listing of relevant experience in air lead analysis, and presentation of a documented Quality Assurance and Quality Control Program. Any deviations from these specifications require written approval from the Owner and Consultant.

## 2.1 GENERAL

- A. Any substitution in materials, equipment, or methods to those specified shall be approved by the Owner prior to use. Any requests for substitution shall be provided in writing to the Owner. The request shall clearly state the rationale for the substitution.
- B. Submit to the Owner product data of all materials and equipment and samples of all materials to be considered as an alternate.
- C. Product data shall consist of manufacturer; catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, safety data sheets (SDS), and other standard descriptive data. Submittal data shall be clearly marked to identify pertinent materials, products or equipment and show performance characteristics and capacities.
- D. Samples shall be of sufficient size and quantity to clearly illustrate the functional characteristics of the product or material with integrally related parts and attachment devices.

## 2.2 MATERIALS AND PRODUCTS

- A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.
- B. Damaged or deteriorating materials shall not be used and shall be removed from the premises.
- C. The Contractor shall have available sufficient inventory or dated purchase orders for materials necessary for the job including protective clothing, respirators, filter cartridges, polyethylene sheeting of proper size and thickness, tape, cleaning chemicals, and air filters.
- D. Materials
1. Polyethylene sheet in a roll size to minimize the frequency of joints shall be delivered to job site with factory label indicating 6 mil.
  2. Polyethylene disposable bags shall be six mil. Tie wraps for bags shall be plastic, five inches long (minimum), pointed and looped to secure filled plastic bags.
  3. Tape or adhesive spray will be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.
  4. Impermeable containers are to be used to receive and retain any lead containing or contaminated materials until disposal at an acceptable disposal site. (The containers shall be labeled in accordance with EPA and DOT standards.)
  5. HEPA filtered exhaust systems shall be used during powered dust generating abatement operations. The use of powered equipment without HEPA exhausts is prohibited.
  6. Detergent shall be a high phosphate content lead specific cleaning agent.
  7. Chemical paint removal agents shall not contain methylene chloride. Chemical removers used on masonry surfaces shall contain anti-stain formulation that inhibits discoloration of stone, granite, or brick. Chemical removers used on wood surfaces shall not raise or discolor the surface being abated.
  8. Chemical removal agent neutralizer shall be compatible with the substrate which they are applied to and the chemical stripper they are used in conjunction with.

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2.3 TOOLS AND EQUIPMENT

- A. Tools and equipment shall be suitable for lead removal.
- B. Air monitoring equipment shall be of the type and quantity required to monitor operations and conduct personnel exposure surveillance in accordance with OSHA requirements.
- C. Electrical equipment, protective devices and power cables shall conform to all applicable codes.
- D. Shower stalls and plumbing shall include sufficient hose length and drain system or an acceptable alternate. One shower stall shall be provided for each eight workers.
- E. Vacuum units, of suitable size and capabilities for the project, shall have HEPA filters capable of trapping and retaining at least 99.97 percent of all monodispersed particles of three micrometers in diameter or larger.
- F. Ladders and/or scaffolds shall be of adequate length, strength and sufficient quantity to support the work schedule. Scaffolds shall be equipped with safety rails and kick boards in compliance with OSHA requirements.
- G. For manual scraping activities, Contractor shall supply each worker with multiple newly sharpened scrapers on a daily basis.
- H. Sanders, grinders, wire brushes and needle gun removal equipment shall be equipped with a HEPA filtered vacuum dust pick-up system.
- I. Other materials such as lumber, nails and hardware necessary to construct and dismantle the decontamination enclosures and the barriers that isolate the work area shall be provided as appropriate for the work.

3.1 PRE-ABATEMENT MEETING

- A. Prior to the start of work a Pre-Construction Meeting will be scheduled and must be attended by the Contractor and any Sub-Contractors. The assigned Contractor Supervisor is also required to attend this meeting.
- B. A detailed project schedule and project submittals shall be presented by the Contractor at the Pre-Construction Meeting. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner and Consultant will inform the Contractor of any scheduling adjustments for this project.
- C. Following the Pre-Construction Meeting, the Contractor shall submit a revised schedule (if needed) no later than one week after the meeting. Upon approval by the Owner and Consultant, the Contractor will receive 'Notice To Proceed' with the work of the Contract.

3.2 WORKER HYGIENE PRACTICES

- A. Work Area Entry. Workers shall don personal protective equipment prior to entering work area, including respiratory protection, disposable coveralls, gloves, headgear, and footwear.
- B. Work Area Departure. While leaving respirators on, workers shall remove all gross contamination, debris, and dust from disposable coveralls and proceed to change room and remove coveralls and footwear and place in hazardous waste disposal container.
- C. Hand washing Facilities. All workers must wash their hands and faces upon leaving the work area.
- D. Equipment. All equipment used by workers inside the work area shall be wet wiped or bagged for later decontamination before removal from the work area.

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- E. Prohibited Activities. Under no circumstances shall workers eat, drink, smoke, chew gum, or tobacco, or remove their respirators in the work area.
- F. Shock Hazards. The Contractor is responsible for using safe procedures to avoid electrical hazards. All temporary electrical wiring will be protected by ground fault circuit interrupters (GFI).

**3.3 GENERAL WORK AREA PREPARATION – LEAD CONTROL AREA**

- A. A Competent Person shall be on the job at all times to ensure the establishment of proper separation of the work area from occupied areas, and proper work practices are followed through project completion.
- B. Where necessary, shut down electrical power. Provide GFCI devices, temporary power, and temporary lighting installed in compliance with the applicable electrical codes. All installations are to be made by a Connecticut licensed electrician.
- C. Shut down and/or isolate heating, cooling, and ventilation air systems or zones to prevent contamination and fiber dispersal to other areas of the structure. During the work, vents around the work area shall be "criticaled" with duct tape and polyethylene sheeting

**3.4 WORK AREA PREPARATION FOR INTERIOR PAINT REMOVAL**

- A. Install ground protection in area of work. Protection shall include a single layer of six-mil reinforced polyethylene sheeting securely fastened to floor extending out a minimum of 10 feet in each direction. Build a small curb at perimeter of sheeting to contain any paint chips and/or dust.
- B. Install caution tape at boundary of the ground protection to demarcate the regulated area. Post warning signs meeting the requirements of OSHA 29 CFR 1926.62 at each work area. In addition, signs shall be posted at all approaches to areas so that employees may read the sign and take the necessary protective steps before entering the area.
- C. Doors and windows within 10 feet of the work area shall be closed and sealed with critical barriers taped and glued.
- D. Place all required tools and equipment in the work area so that workers will not have to leave the area. This will avoid stepping of the protective sheeting.
- E. Use protective shoe covers, tack pads or have available cleaning materials to wipe off shoes prior to stepping off the protective sheeting.

**3.5 WORK AREA PREPARATION FOR EXTERIOR PAINT REMOVAL**

- A. Install isolation barrier on the interior side of the window openings and door opening. Protection shall be affixed to the inside finish surfaces to isolate window and door openings scheduled for defective lead based paint removal to the exterior. One layer of six-mil polyethylene sheeting shall create the critical barrier between the exterior and interior of the building.
- B. Install ground protection on the exterior of the building in area of work. Protection shall include a single layer of six-mil reinforced polyethylene sheeting securely fastened to foundation extending out a minimum of 10 feet in each direction. Build a small curb at perimeter of sheeting to contain any paint chips and/or dust.
- C. Install caution tape at boundary of the ground protection to demarcate the regulated area. Post warning signs meeting the requirements of OSHA 29 CFR 1926.62 at each work area. In addition, signs shall be posted at all approaches to areas so that employees may read the sign and take the necessary protective steps before entering the area.

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- D. Doors and windows within 10 feet of the work area shall be closed and sealed with critical barriers taped and glued.
- E. Place all required tools and equipment in the work area so that workers will not have to leave the area. This will avoid stepping off the protective sheeting.
- F. Use protective shoe covers, tack pads or have available cleaning materials to wipe off shoes prior to stepping off the protective sheeting.

**3.6 WORK AREA PREPARATION FOR LEAD IN DUST - FLOORS**

- A. Moveable objects shall be washed with TSP and HEPA vacuumed cleaned prior to removal from work areas. Moveable objects shall be removed the work areas, stored, and re-installed by the Contractor following acceptable clearance sampling by the Consultant. The Contractor is responsible for storing the moveable objects in a clean, dry location. Any damage to moveable objects is the responsibility of the Contractor to repair and/or replace. The Contactor is responsible for documenting existing damage to moveable objects prior to removing them from the work area.
- B. Non-movable objects within the work areas shall be washed with TSP, HEPA vacuumed, and covered with a single layer of six mil polyethylene sheeting.
- C. Seal off all openings including, but not limited to, windows, corridors, doorways, skylights, ducts, grills, diffusers, and any other penetration of the work areas, with polyethylene sheeting and seal with tape. Doorways which will not be used for passage during work must be sealed with barriers as required for separation of work area and occupied areas. Doorways to be utilized for entrance and exist into work areas shall be sealed with two overlapping sheets of six mil polyethylene sheeting attached at the top and one side.
- D. Occupied areas and/or building space not within the work areas shall be separated from lead abatement work areas by means of airtight barriers.
- E. Place all required tools and equipment in the work area so that workers will not have to leave the area.
- F. Use protective shoe covers, tack pads or have available cleaning materials to wipe off shoes prior to leaving the lead abatement work area.

**3.7 GENERAL WORK PROCEDURES**

- A. The Contractor shall have a designated "competent person" on the job at all times to ensure proper work practices throughout the project.
- B. The Contractor shall regulate the work area as required for compliance with OSHA regulation 29 CFR 1926.62 to prohibit non-trained workers from entering areas where ACM are to be removed.
- C. The Contractor shall establish a worker hygiene facility remote from the work area.

**3.8 WORK PROCEDURES FOR INTERIOR PAINT REMOVAL**

- A. Prior to the removal of the paint on the concrete walls, the Contractor shall ensure that work area preparation has been conducted in accordance with Section 3.3 and 3.4 of this Specification.
- B. Wet down paint which is to be removed to reduce the amount of dust generated during the removal process.
- C. If chemical stripper is utilized to remove defective lead based paint, the Contractor shall ensure the following:
  - 1. Apply chemical stripper in quantities and for duration's specified by manufacturer.
  - 2. Remove lead paint from surface down to bare substrate with no trace of residual pigment. Use sanding and hand scraping to supplement chemical methods as required to remove residual pigment.

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3. Apply neutralizer compatible with substrate and chemical agent to substrate following removal in accordance with manufacturer's instructions.
  4. Protect adjacent surfaces from damage by chemical removal methods.
  5. Maintain a portable eyewash station in the work area.
- D. If wet scraping/wet sanding is utilized to remove defective lead based paint, the Contractor shall ensure the following:
1. Remove loose paint from work surfaces by first "misting" the surface and then carefully scraping any loose paint. Keep surfaces wet during the entire operation.
  2. Remaining paint edges can be "feathered" by wet sanding with damp sandpaper.
- E. The following paint removal methods are prohibited:
1. The use of heat guns, or any blasting media, or power tool assisted grinding, sanding, cutting, or wire brushing without the use of HEPA vacuum dust collection systems to remove lead-based paint is prohibited.
  2. Welding or torch cutting of materials painted with lead-based paint is prohibited. Where cutting, welding, rivet busting, or torch cutting of materials is required, prior removal of the lead-based paint shall be performed in the affected area.
  3. Dry scraping.
- F. Do not damage adjacent surfaces.
- G. Initiate cleanup immediately after component removal has been completed. Remove any dust located behind the component removed.
- H. Maintain appropriate wash station within the work area.

### 3.9 WORK PROCEDURES FOR INTERIOR COMPONENT REMOVAL

- A. Prior to the removal of the components containing lead paint, the Contractor shall ensure that work area preparation has been conducted in accordance with Section 3.3 and 3.4 of this Specification.
- B. Wet down components which are to be removed to reduce the amount of dust generated during the removal process.
- C. Remove components utilizing hand tools, and follow appropriate safety procedures during removal. Remove the building component by approved methods that will provide the least disturbance to the substrate material. Do not damage adjacent surfaces.
- D. Initiate cleanup immediately after component removal has been completed. Remove any dust located behind the component removed.
- E. Maintain appropriate wash station within the work area.

### 3.10 WORK PROCEDURES FOR EXTERIOR PAINT REMOVAL

- A. Prior to the removal of the defective lead based paint on exterior of residence, the Contractor shall ensure that work area preparation has been conducted in accordance with Section 3.3 and 3.5 of this Specification.
- B. If chemical stripper is utilized to remove defective lead based paint, the Contractor shall ensure the following:
  1. Apply chemical stripper in quantities and for duration's specified by manufacturer.
  2. Remove lead paint from surface down to bare substrate with no trace of residual pigment. Use sanding and hand scraping to supplement chemical methods as required to remove residual pigment.
  3. Apply neutralizer compatible with substrate and chemical agent to substrate following removal in accordance with manufacturer's instructions.
  4. Protect adjacent surfaces from damage by chemical removal methods.

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5. Maintain a portable eyewash station in the work area.
- C. If wet scraping/wet sanding is utilized to remove defective lead based paint, the Contractor shall ensure the following:
  1. Remove loose paint from work surfaces by first “misting” the surface and then carefully scraping any loose paint. Keep surfaces wet during the entire operation.
  2. Remaining paint edges can be “feathered” by wet sanding with damp sandpaper.
- D. The following paint removal methods are prohibited:
  1. The use of heat guns, or any blasting media, or power tool assisted grinding, sanding, cutting, or wire brushing without the use of HEPA vacuum dust collection systems to remove lead-based paint is prohibited.
  2. Welding or torch cutting of materials painted with lead-based paint is prohibited. Where cutting, welding, rivet busting, or torch cutting of materials is required, prior removal of the lead-based paint shall be performed in the affected area.
  3. Dry scraping.
- E. Collect debris in the work area throughout the operation using wet clothes or a HEPA vacuum.
- F. Upon completion of properly preparing the surface for encapsulation, the surfaces shall be wet wiped and HEPA vacuumed clean of debris and dust.\
- G. Apply appropriate encapsulation for the surface to be painted. MSDs and other product information for the encapsulant to be utilized for the work shall be submitted to the Owner and approved prior to the work commencing.
- H. Protect adjacent surfaces from debris and/or dust contamination.
- I. Maintain appropriate wash station within the work area.

### 3.11 WORK PROCEDURES FOR LEAD IN DUST

- A. Prior to the cleaning of lead in dust, the Contractor shall ensure that work area preparation has been conducted in accordance with Section 3.3 and 3.7 this Specification.
- B. Gross debris, paint chips, etc. should first be removed by HEPA vacuuming materials and wet spraying debris to be removed by hand to minimize dust generation.
- C. HEPA vacuum surface thoroughly and repeatedly.
- D. Wet clean surfaces. Following HEPA vacuuming. Wash the surfaces with a suitable cleaning detergent (TSP or equivalent). Cleaning the solution as it becomes dirty. Rinse all areas with a fresh cloth. Do not reuse contaminated cloths. HEPA vacuum surface again.
- E. Maintain appropriate wash station within the work area.

### 3.12 DECONTAMINATION PROCEDURES

- A. All workers must wash upon leaving the work area. Wash facilities will be provided by the removal Contractor in compliance with 29 CFR 1926.51(f) and 20 CFR 1926.62. This wash facility will consist of, at least, running potable water, towels, soap, and a HEPA vacuum. Upon leaving the work area, each worker will HEPA vacuum gross debris from work suit, remove and dispose of work suit, wash and dry face and hands, and vacuum clothes. Do not remove lead chips or dust by blowing or shaking of clothing. Wash water shall be collected, filtered, and disposed of in accordance with all applicable regulations.

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- B. Operational shower facilities, remote to the work area, shall be provided by the Contractor and maintained in working order such that any worker has the option of decontamination by showering. If air monitoring data by the Contractor or State's Inspector or risk assessor shows that employee exposure to airborne lead exceeds 50  $\mu\text{g}/\text{m}^3$ , the following mandatory showering conditions apply:
  - 1. Street clothes cannot be worn into the work area and shall be stored in the change room. Workers shall wear disposable suits over clothing that stays on site in the change room, or disposable suits over nylon or Tyvek undergarments, or coveralls that are laundered on site.
  - 2. Street shoes cannot be worn into the Lead Control Area and shall be stored in the change room. Dedicated shoes that do not leave the Lead Control Area may be utilized. Work shoes covered by disposable booties may be utilized if the shoes are cleaned after each use and kept in the change room.
  - 3. Showers must be utilized.
- C. Ensure proper entry and exit procedures for all persons who enter and leave the Lead Control Area. Remove and containerize all visible accumulations of paint chips and associated dust and debris daily. During clean-up, utilize rags and sponges wetted with lead-specific detergent and water to minimize dust levels.

### 3.13 WORK AREA CLEAN UP

- A. Mop heads, waste water, broom heads, rags and sponges used in the clean-up activity shall be disposed of as hazardous lead-bearing waste.
- B. Sealed disposal containers and all equipment used in the work area shall be included in the clean-up.
- C. Clean all surfaces with HEPA filtered vacuum equipment prior to wet cleaning all surfaces within regulated area.
- D. Upon completion of lead paint removal, the Contractor shall begin final cleaning. The Contractor shall clean and remove any contaminated material, equipment, or debris including polyethylene sheeting from the work area. The polyethylene sheeting shall first be sprayed or misted with water for dust control, the resulting removal debris removed, and then the sheeting shall be folded in upon itself.
  - 1. Large Debris. Large debris from demolition shall be wrapped in polyethylene sheeting at least six mil thick, sealed with heavy duty duct tape, and transported to dumpsters.
  - 2. Small Debris. Prior to picking up or collecting small debris, the surfaces of this debris shall be sprayed with a fine mist of water. The debris shall be picked up, collected, and placed into a single plastic bag, at least six mils thick. The bags shall not be overloaded, shall be securely sealed, and shall be transported to dumpster for disposal. Dry sweeping is not permitted in the work area.
  - 3. Sheeting. Removal of floor polyethylene sheeting and critical barriers, shall begin at the corners and be folded into the middle to contain the dust or residue. All collected polyethylene sheeting shall be placed in six mil polyethylene bags for proper disposal.
  - 4. HEPA Vacuuming. Once the six mil polyethylene sheeting is removed from the work area, cleaning shall begin with a thorough HEPA vacuuming of all surfaces, proceeding down the walls and including window trim and floors. The floor shall be vacuumed last, beginning at the farthest corners from the entrance to the work area. HEPA vacuuming shall again be performed as noted above, after the following TSP wash.
  - 5. Lead Specific Detergent. The Contractor shall next wash or mop the same surfaces with a lead specific detergent such as tri sodium phosphate (TSP) (five percent) and allow surfaces to dry. The Contractor shall prepare and use detergents according to the manufacturer's instructions. The manufacturer's recommended coverage shall be followed. Then a second HEPA Vacuuming of the surfaces shall be performed by the Contractor, as described above. By the conclusion of the cleaning phase, all visible dust and debris shall have been completely removed.
  - 6. Hygiene, Cleaning Equipment and Supplies. Special attention shall be given to personal hygiene and the cleaning of supplies and/or equipment. All mop heads; sponges and rags shall be replaced or changed daily, at a minimum.

### 3.14 CONSULTANTS INSPECTION AND RE-OCCUPANCY CLEARANCE SAMPLING RESPONSIBILITIES

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- A. The Consultant shall conduct inspection throughout the progress of the abatement project. Inspections may be conducted in order to document the progress of the abatement work as well as the procedures and practices employed by the Contractor.
- B. The Consultant shall perform the following inspections during the course of abatement activities:
  - 1. Pre-commencement Inspection. Pre-commencement inspections shall be performed at the time requested by the Contractor. The Consultant shall be informed 12 hours prior to the time the inspection is needed. If, during the course of the pre-commencement inspection, deficiencies are found, the Contractor shall perform the necessary adjustments in order to obtain compliance.
  - 2. Work Area Inspections. Work area inspections shall be conducted on a daily basis at the discretion of the Consultant. During the course of the work inspections, the Consultant shall observe the Contractor's removal procedures, verify barrier integrity, assess project progress, and inform the Contractor of specific remedial activities if deficiencies are noted.
  - 3. Final Visual Inspection. The Consultant, upon request of the Contractor, shall conduct a final visual inspection. After final cleaning, the inspector/code enforcement official shall perform a visual inspection to identify any remaining dust. The inspection may entail the use of a white glove.
- C. The Consultant shall perform wipe sampling on the floors following cleaning of the lead in dust where work is performed.
- D. Re-Occupancy Clearance Sampling Criteria – The following dust wipe criteria shall be met prior to occupancy:
  - 1. Floors – 40 ug/ft<sup>2</sup>
  - 2. Window Sills – N/A – Complete Component Removal Scheduled. Consultant to Verify Component Removed.

### 3.15 DISPOSAL OF WASTE

- A. Disposal of hazardous lead bearing material must be in compliance with the requirements of, and authorized by, the State of Connecticut, Department of Energy and Environmental Protection, Office of Solid Waste Management and with the requirements of the Resource Conservation and Recovery Act (RCRA).
- B. The Consultant has performed lead testing, including components specified for removal and disposal and those to remain in place. Results indicate potential for waste to be hazardous lead waste.
- C. The Contractor shall segregate the following materials for disposal as potential hazardous lead waste based on Toxicity Characteristic Leachate Procedure that the Contractor will conduct for each dumpster of waste.
  - 1. Window Sashes
  - 2. Window Trim and Sill
  - 3. Interior Door and Casing
  - 4. Wood Ceiling
  - 5. Paint chips from surface preparation and other debris.
  - 6. In base bid, the Contractor should assume 10 cubic yards of hazardous waste.
- D. The following materials are likely to leach lead at hazardous levels in excess of 5 mg/liter. The Contractor shall containerize and dispose of the following materials as hazardous lead waste at an EPA approved treatment, storage, and disposal facility.
  - 1. Paint chips.
  - 2. Paint dust.
  - 3. Sludge from chemical stripping.
  - 4. Dust from HEPA filters and from damp sweeping.
  - 5. Rags, sponges, mops, HEPA filters, respirator cartridges, scrapers, and other materials used for testing, removal, and clean up.
  - 6. Disposable work clothes and respirator filters.
  - 7. Contents of HEPA vacuums used on this project.
  - 8. The cost of the above disposal of hazardous waste is to be provided at no additional cost to the Owner.

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- E. Contractor shall wipe the following materials clean of all dust, dirt and debris and dispose of the material as construction debris:
  - 1. Polyethylene sheeting used in removal activities other than chemical removal.
- F. Contractor shall collect the wash water generated by the worker shower and wash facilities in 55 gallon drums and filter the water using a 2 stage filtration system composed of:
  - 1. 5 micron porosity in-line cartridge particulate filter followed by activated carbon filter in-line cartridge
- G. Hold the filtered water for testing prior to discharge to the sanitary sewer. Contractor shall test the water and verify lead levels below 0.1 parts per million (ppm) and pH between 6 and 8 prior to discharge. Water that fails the testing criteria shall be treated with sodium hydroxide, pH adjusted, and retested. If the second test fails the 0.1 parts per million (ppm) of water test, the Contractor shall filter waste water by reverse osmosis prior to testing and discharge to the sanitary sewer.
- H. All hazardous lead waste shall be containerized in accordance with 49 CFR 178. Label and placard each container in accordance with 39 CFR 1926.62 and 40 CFR 172 to identify the type of waste and the date the container was filled.
- I. The Contractor may not store containerized hazardous lead waste on the job site for in excess of 180 calendar days from the accumulation start date.
- J. Contractor shall utilize a certified transporter for hazardous waste in compliance with DOT 49 CFR 172.
- K. Contractor shall submit the completed Uniform Hazardous Waste Manifest, EPA Form 8700-22 for each load of hazardous waste within 30 calendar days following the date the load leaves the site. Copies of all landfill receipts will be retained by the Consultant as part of the project file. The receipts will be signed by the landfill operator upon delivery, and the quantity of asbestos debris leaving the job site and arriving at the landfill acknowledged.

END OF SECTION

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SECTION 028200 – ASBESTOS ABATEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. The Contractor, Subcontractors and/or suppliers providing goods or services referenced in or related to this Section shall also be bound by the Documents identified in Division 1 Section “Summary”, Paragraph 1.1A, entitled “Related Documents.”
- B. Limited Hazardous Building Materials Inspection Report Dated May 2014.
- C. Hazardous Materials Abatement Drawings HM-01, HM-02, HM-03, and HM-04.
- D. Lead Abatement Section 028300.

1.2 CONSULTANT

- A. The Owner shall retain a Consultant for the purposes of project management and monitoring during Asbestos Abatement. The Consultant will represent the Owner in all phases of the abatement project at the discretion of the Owner. The Contractor will regard the Consultant's direction as authoritative and binding as provided herein, in matters particularly but not limited to approval of work areas, review of monitoring results, completion of the various segments of work, final completion of the abatement, submission of data, and daily field punch list items.
- B. The State of Connecticut licensed Asbestos Consultant – Project Designer is Kevin McCarthy (license no. 000274).

1.3 USE OF THE CONTRACT DOCUMENTS

- A. It shall be incumbent upon the Contractor to visit the Site and determine what exists, its condition, and what will be required to accomplish the Work intended by the Contract Documents. No increase in the Contract Sum will be permitted as a result of the Contractor's failure to visit the site and understand the existing conditions.
- B. All work shall comply with the Contract Documents and with applicable Codes, laws, regulations, and ordinances wherever applicable. The most stringent of all the foregoing shall govern.
- C. It is not intended that the Specifications show every detail of the Work, but the Contractor shall be required to furnish within the Contract Sum all material and labor necessary for the completion of the Work in accordance with the intent of the Specifications.
- D. In case of ambiguity among the Contract documents, the more stringent requirement as determined by the Consultant shall prevail.
- E. The Work of this Contract includes making modifications as necessary, subject to approval by Owner in consultation with the Consultant, to correct any conflicts.

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- F. All items, not specifically mentioned in the Specifications but implied by trade practices to complete the work, shall be included.

1.4 EXAMINATION OF THE SITE

- A. It is understood that the Contractor has examined the Site and made his own estimates of the facilities and difficulties attending the execution of the Work, and has based his price thereon.
- B. Except for unforeseeable concealed conditions as determined by the Consultant, the Contractor shall make no claim for additional cost due to the existing conditions at the site.

1.5 CONTRACTOR QUALIFICATIONS

- A. All bidders shall submit a record of prior experience in asbestos abatement projects, listing no less than three completed jobs in the past year, with all projects of similar size and scope. The Contractor shall list the experience and training of the project foremen and all on-site personnel. The information that should be included is as follows:
  - 1. Project Name and Address
  - 2. Owner's Name and Address
  - 3. Architect/Consultant
  - 4. Contract Amount
  - 5. Date of Completion
  - 6. Extras and Changes
- B. The Contractor selected must appear on the approved list of Asbestos Abatement Contractors on file at the State of Connecticut Department of Public Health (CTDPH) and hold a valid license for asbestos abatement within the State of Connecticut.
- C. Submit a written statement regarding whether the Contractor has ever been found out of compliance with federal or state asbestos and/or lead regulations pertaining to worker protection, removal, transport, or disposal.

1.6 TESTING LABORATORY SERVICES

- A. The Contractor shall submit to the Consultant the name; address and qualifications of proposed laboratories intended to be utilized for sample analysis as required by this section.

1.7 ADDITIONAL GENERAL REQUIREMENTS

- A. The Contractor shall employ a competent State of Connecticut licensed Asbestos Abatement Supervisor with at least three years of experience on projects of similar scope and magnitude who shall be responsible for all work involving asbestos abatement as described in the specifications and defined in applicable regulations, and have full time daily supervision of the same. The Supervisor shall be the competent person as defined by OSHA regulations.
- B. The Contractor shall allow the work of this contract to be inspected if required by local, state, federal, and any other authorities having jurisdiction over such work. The Contractor shall immediately notify the Owner and Consultant and shall maintain written evidence of such inspection for review by the Owner and Consultant.

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- C. The Contractor shall incur the cost of all fines resulting from regulatory non-compliance as issued by federal, state, and local agencies. The Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory non-compliance or negligence.
- D. The Contractor shall immediately notify the Owner and Consultant of the delivery of all permits, licenses, certificates of inspection, of approval, or occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless of who issued, and shall cause them to be displayed to the Owner and Consultant for verification and recording.

1.8 SCOPE OF WORK

- A. Work outlined in this Section includes all work necessary for the removal and disposal of asbestos-containing materials (ACM) impacted during the renovations at 62 Morehouse Highway in Fairfield, Connecticut. This work includes, but is not limited to, pipe insulation, duct wrap/cover, wrap/cove on sheetrock ceiling, ceramic wall tile grout, yellow/white/brown sheet flooring, exterior window caulking and glazing compounds, and roof flashing.

1.9 PROJECT DESCRIPTION

- A. The base bid includes the removal and disposal of all asbestos containing materials as identified herein, and on the architects drawings by workers meeting requirements of OSHA 1926.1101 for Class 1 and 2 work. The base bid will include the cost for removal and disposal of asbestos containing pipe insulation, duct wrap/cover, wrap/cove on sheetrock ceiling, ceramic wall tile grout, yellow/white/brown sheet flooring, exterior window caulking and glazing compounds, and roof flashing.
- B. Additional materials as discovered outside of those listed will be covered by unit prices. The quantities are estimates only and should be verified by the Contractor.
- C. This bid includes the following asbestos containing materials:

**BASE BID – ASBESTOS**

LOCATION	MATERIAL TYPE	QUANTITY
Throughout Residence	Pipe Insulation <i>Includes selective demolition and abatement of inaccessible materials</i>	500 LF
Throughout Residence	Duct Wrap/Cover <i>Includes selective demolition and abatement of inaccessible materials</i>	400 SF
Basement Furnace Room	Wrap/Cover on Sheetrock Ceiling	200 SF
Kitchen	Pink Sink Undercoating	1 Sink
Main Floor Bathroom	Ceramic Wall Tile Grout <i>Includes removal and disposal of ceramic tile</i>	50 SF
Kitchen	Yellow/White/Brown Sheet Flooring	100 SF
Exterior Window Systems	Exterior Window Glazing Compound Exterior Window Caulking Compound	16 Window Systems
Basement Exterior Window System (Crank style)	Exterior Window Glazing Compound	3 Window System

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LOCATION	MATERIAL TYPE	QUANTITY
Roof	Roof Flashing	10 SF

- D. Some of the work will be performed in multiple mobilizations at different periods of time in conjunction with other trades (i.e., other trades work, demolition work, etc.).
- E. Safety Data Sheets (SDS) for chemicals to be used during the project must be submitted to the owner's representative prior to site delivery. Encapsulants applied to any surface that will receive a new finish that requires an adhesive must be compatible with the application of the new finish.
- F. The contractor is responsible for providing temporary water, power, and heat as needed at the site. Temporary lighting within the work areas must be connected to Ground Fault Circuit Interrupter (GFCI) Power Panels installed by a State of Connecticut licensed electrician and located outside of the work areas.

1.10 DEFINITIONS

- A. The following definitions relative to asbestos abatement apply:
  1. ABATEMENT - Procedures to control fiber release from asbestos containing materials; includes removal, encapsulation, and enclosure.
  2. AIR MONITORING - The process of measuring the fiber concentration of an area or of a person.
  3. AMENDED WATER - Water to which a surfactant has been added.
  4. ASBESTOS - The name given to a number of naturally occurring fibrous silicates. This includes the serpentine forms and the amphiboles and includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite, or any of these forms, which have been chemically altered.
  5. ASBESTOS FELT - A product made by saturating felted asbestos with asphalt or other suitable bindery, such as a synthetic elastomer.
  6. ASBESTOS FIBERS - Those particles with a length greater than five (5) microns and a length to diameter ratio of 3:1 or greater.
  7. ASBESTOS WORK AREA - A regulated area as defined by OSHA 29 CFR 1926.1101 where asbestos abatement operations are performed which is isolated by physical barriers to prevent the spread of asbestos dust, fibers, or debris. The regulated area shall comply with requirements of regulated area for demarcation, access, respirators, prohibited activities, competent persons and exposure assessments and monitoring.
  8. ASPHALT SHINGLES, COMPOSITION SHINGLES OR STRIP SLATES: (Pitched Roof Shingle) - a roofing material manufactured by saturating a dry felt with asphalt then coating the saturated felt with a harder asphalt mixed with a fine mineral, glass fiber, asbestos or organic stabilizer. All or part of the weather side may be covered with mineral granules, or with powdered talc or mica.
  9. BASE FLASHING (roof) - the flashing provided by upturned edges of a water tight membrane on a roof. May contain metal and associated waterproofing material or combination of roofing felts and waterproofing at the joint between a roofing surface and a vertical surface such as a wall or parapet. Also base flashing may be present at perimeter of completely flat roof.
  10. BUILT-UP ROOFING (Composition Roofing, Felt and Gravel Roofing, Gravel Roofing) - a continuous roof covering made up of laminations or plies of saturated or coated roofing felts, alternated with layers of asphalt or coal-tar pitch and surfaced with gravel, paint or finish coat.
  11. CAULKING - resilient mastic compound often having a silicone bituminous or rubber base; used to seal cracks, fill joints, and prevent leakage. Typical applications: around windows, and doors. Caulking is at joints between two dissimilar materials. (i.e. Masonry to wood, masonry to steel)
  12. CLEAN ROOM - An uncontaminated area or room, which is a part of the worker decontamination enclosure with provisions for storage of workers' street clothes and protective equipment.
  13. CLEARANCE SAMPLING - Final air sampling performed aggressively after the completion of the abatement project in a regulated area. Air samples collected by the air sampling professional

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- having a fiber concentration of less than 0.01 fibers/cc of air in each of five (5) samples collected inside the containment will denote acceptable clearance sampling by Phase Contrast Microscopy or Five air samples collected inside the containment by the air sampling professional having an average asbestos concentration of less than 70 structures per square millimeter of air will denote acceptable clearance sampling for Transmission Electron Microscopy.
14. **COMPETENT PERSON** - As defined by 29 CFR 1926.1101, a representative of the Abatement Contractor who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure. Who has authority to take prompt corrective measures to eliminate such hazards during asbestos removal. Competent person shall be properly trained in accordance with EPA's Model Accreditation Plan.
  15. **CURTAINED DOORWAY** - A device to allow ingress and egress from one area to another while permitting minimal air movement between the areas. Two curtained doorways spaced a minimum of six feet apart can form an airlock.
  16. **DAMP PROOFING** - application of a water impervious material to surface such as wall to prevent penetration of moisture, typically at foundation or below grade surface.
  17. **DECONTAMINATION ENCLOSURE SYSTEM** A series of connected areas, with curtained doorways between any two adjacent areas, for the decontamination of workers and equipment. A decontamination enclosure system always contains at least one airlock and is adjacent and connected to the regulated area, where possible.
  18. **ENCAPSULANT** - A liquid material which can be applied to asbestos containing materials which controls the possible release of asbestos fibers from the materials either by creating a membrane over the surface (bridging encapsulant) or penetrating the material and binding its components together (penetrating encapsulant).
  19. **EQUIPMENT ROOM** - Any contaminated area or a room that is part of the worker decontamination enclosure with provisions for storage of contaminated clothing and equipment.
  20. **FIXED OBJECT** - Unit of equipment or furniture in the work areas that cannot be removed from the work area.
  21. **FRIABLE ASBESTOS MATERIALS** - Any material that contains more than 1% asbestos by weight, that can be crumbled, pulverized or reduced to powder by hand pressure.
  22. **GLAZING COMPOUND** - any compound used to hold window glass in place, also referred to as putty, or glazier's putty. Is not field applied, usually installed during manufacture of windows.
  23. **HEPA FILTER** - High Efficiency Particulate Air (HEPA) filter in compliance with ANSI Z9.2 1979.
  24. **HEPA VACUUM EQUIPMENT** - Vacuum equipment equipped with a HEPA filter system for filtering the effluent air from the unit.
  25. **MOVABLE OBJECT** - Unit of equipment of furniture in the work area that can be removed from the work area.
  26. **NEGATIVE AIR PRESSURE EQUIPMENT** - A portable local exhaust system equipped with HEPA filtration used to create negative pressure in a regulated area (negative with respect to adjacent unregulated areas) and capable of maintaining a constant, low velocity air flow into regulated areas from adjacent unregulated areas.
  27. **NESHAPS** - National Emissions Standard for Hazardous Air Pollutants regulations enforced by the EPA.
  28. **PERMISSIBLE EXPOSURE LEVEL (PEL)** - The maximum airborne concentration of asbestos fibers to which an employee is allowed to be exposed. The new level established by OSHA 29 CFR 1926.1101 is 0.1 fibers per cubic centimeter of air as an eight (8) hour time weighted average and 1.0 fibers /cc averaged over a sampling period of 30 minutes as an Excursion Limit. The Contractor is responsible for maintaining work areas in a manner that this standard is not exceeded.
  29. **PROJECT MONITOR** - A professional capable of conducting air monitoring and analysis of schemes. This individual should be an industrial hygienist, an environmental scientist, or an engineer with experience in asbestos air monitoring and worker protection equipment and procedures. This individual should have demonstrated proficiency in conducting air sample collection in accordance with 29 CFR 1910.1001 and 29 CFR 1926.1101.

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30. **REGULATED AREA** - An area established by the employer to demarcate where Class I, II, and III asbestos work is conducted and any adjoining area where debris and waste from such asbestos work accumulate, and a work area within which airborne concentrations of asbestos exceed or there is a reasonable possibility that they may exceed the PEL.
31. **SHOWER ROOM** - A room between the clean room and the equipment room in the work decontamination enclosure with hot and cold running water and suitably arranged for employee showering during decontamination. The shower room is located in an airlock between the contaminated area and the clean area.
32. **WATERPROOFING** - Material, usually a membrane or applied compound (tar/mastic), used to make a surface impervious to water, includes concealed conditions (applications around doors, windows, and in wall cavities). Sometimes combined with felts.

**1.11 SUBMITTALS**

- A. The Contractor shall submit the following prior to the pre-construction meeting:
  1. Submit a schedule to the Owner and the Consultant which defines a timetable for executing and completing the project, including set up, removal, cleanup, decontamination, and air clearance monitoring.
  2. Submit the identity of the hauling contractor and location of the landfill to be used.
  3. Submit video documentation showing the conditions of the building prior to the start of work. The contractor will be held responsible for all damage to the building and its contents not shown on the video documentation.
  4. Submit the plans and construction details for the construction of the decontamination enclosure systems and the isolation of the work areas as may be necessary for compliance with this specification and applicable regulations.
  5. Submit the training, medical, and fit test records of each employee who may be on the project site.
  6. Submit the qualifications of the air sampling professional that the Contractor proposed to use for this project to perform employee exposure monitoring.
  7. Submit detailed product information on all materials and equipment proposed for asbestos abatement work on this project.
  8. Submit pertinent information regarding the qualifications of the Project Supervisor (competent person) for this project as well as a list of past projects completed. Effective June 4, 2000, no individual shall provide services as an asbestos abatement site supervisor or as an asbestos abatement work without a certificate to do so issued by CTDPH.
- B. The following shall be submitted to the Consultant during the work:
  1. Results of personal air sampling
  2. Training and medical records for new employees to start work (24 hours in advance)
- C. The following shall be submitted to the Consultant at the completion of work:
  1. Copies of all air sampling results
  2. Contractor logs
  3. Completed copies of Waste Shipment Records (WSR)

**1.12 REGULATIONS AND STANDARDS**

- A. The Contractor shall be solely responsible for conducting this project and supervising all work in a manner that will be in conformance with all federal, state, and local regulations and guidelines pertaining to asbestos abatement. Specifically, the Contractor shall comply with the requirements of the following:
  1. U.S. Environmental Protection Agency (EPA) National Emissions Standards for Hazardous Air Pollutants (NESHAPS) Regulations (40 CFR 61, Subpart M);
  2. EPA Asbestos Hazard Emergency Response Act (AHERA) Regulations (40 CFR 763, Subpart E);

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3. Occupational Safety and Health Administration (OSHA) Asbestos Regulations (29 CFR 1910.1001 and 1926.1101);
4. Connecticut Department of Energy and Environmental Protection (DEEP) Regulations (Section 22a 209 8(i) and Section 22a 220 of the Connecticut General Statutes);
5. Connecticut Department of Public Health (CTDPH) Standards for Asbestos Abatement (Sections 19a 332 1 to 19a 332-16);
6. CTDPH Asbestos Containing Materials in Schools Sections 19a 333-1 to 19a 333-13;
7. 2003 International Building Code as adopted by the 2005 State of Connecticut Building Code including the 2009, 2011, and 2013 amendments;
8. Life Safety Code (NFPA);
9. Local health and safety codes, ordinances or regulations pertaining to asbestos remediation and all national codes and standards including ASTM, ANSI, and Underwriter's Laboratories.

1.13 EXEMPTIONS

- A. Any deviations from these specifications require the written approval and authorization from the Owner and Consultant.
- B. Any modifications from the standard work practices identified in the CTDPH Standards for Asbestos Abatement, Sections 19a 332a 1 to 19a-332a-16, Sections 20-440-1 to 20-440-9, Section 20-441 and Section 19a-332e-1 to 19a-332e-2, must be requested in writing, and approved in writing from the CTDPH.

1.14 FINAL AIR CLEARANCE

- A. Following the completion of the encapsulation phase of the work, the Consultant shall collect final air clearance samples inside the work area per CTDPH Standards for Asbestos Abatement (19a-332-1 to 19a-332-16)..
- B. The Owner of the facility shall be responsible for payment of the sampling and analysis of the initial final air clearance samples only. The Contractor shall be responsible for payment of all costs associated with the collection and analysis of additional final air clearance samples if the first set of samples fail to satisfy the clearance criteria.

1.15 NOTIFICATIONS, POSTINGS, SUBMITTALS, AND PERMITS

- A. The Contractor shall make the following notifications, and provide the submittals to the following agencies prior to the commencement of removal work. This notification is required ten (10) calendar days prior to the start of the abatement project:
  1. Connecticut Department of Energy and Environmental Protection  
Health Services and Solid Waste Management Unit  
79 Elm St.  
Hartford, CT 06106  
(Only if asbestos waste is disposed of in Connecticut)
  2. Connecticut Department of Public Health  
410 Capital Avenue  
MS #51 AIR  
P.O. Box 340308  
Hartford, CT 06134
- B. The minimum information included in the notification to these agencies includes:

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1. Name and address of building Owner/Operator
2. Building location
3. Building size, age, and use
4. Amount of asbestos
5. Work schedule, including proposed start and completion date
6. Asbestos removal procedures to be used
7. Name and location of disposal site for generated asbestos waste, residue, and debris
8. If landfill opens in Connecticut to accept ACM waste, Consultant will notify DEEP prior to utilizing said landfill.

1.16 WORK SITE SAFETY PLAN

- A. The Contractor shall establish a set of emergency procedures and shall post them in a conspicuous place at the work site. The safety plan should include provisions for the following:
  1. Evacuation of injured workers.
  2. Emergency and fire exit routes from all work areas.
  3. Emergency first aid treatment.
  4. Local telephone numbers for emergency services including ambulance, fire, and police.
  5. A method to notify occupants of the building in the event of a fire or other emergency requiring evacuation of the building.
- B. The Contractor is responsible for training all workers in these procedures.

1.17 INDEPENDENT AIR SAMPLING AND ASBESTOS ABATEMENT MONITORING

- A. This section describes independent air sampling work being performed on behalf of the Owner. This work is not in the Contract Sum. This section describes air monitoring carried out by the Owner's Consultant to verify that the building beyond the work area and the outside environment remains uncontaminated. (Personal air monitoring required by OSHA is work to be performed by the Contractor and is within the Contract Sum.)
- B. The purpose of the Owner's Consultant's air monitoring is to detect faults in the work area isolation such as:
  1. Contamination of the building outside of the work area by airborne asbestos fibers
  2. Failure of filtration or rupture in the differential pressure system
  3. Contamination of air outside the building envelope by airborne asbestos fibers.
- C. Should any of the above occur the Contractor shall immediately cease asbestos abatement activities until the fault is corrected. Do not recommence work until authorized by the Owner's Consultant.
- D. The Owner's Consultant may monitor airborne fiber counts in the Work Area. The purpose of this air monitoring will be to detect airborne asbestos concentrations, which may challenge the ability of the Work Area isolation procedures to protect the balance of the building or outside of the building from contamination by airborne fibers.
- E. To determine if the elevated airborne fiber counts encountered during abatement operations have been reduced to an acceptable level, the Consultant will sample and analyze air in accordance with clearance air sampling requirements.
- F. The Owner's Consultant may perform on-site monitoring throughout the course of the project, as follows:
  1. All work procedures shall be continuously monitored by the Consultant to assure that areas outside the designated work locations in the buildings will not be contaminated.

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2. Prior to work on any given day, the Contractor's designated "competent person" shall discuss the day's work schedule with the Consultant to evaluate job tasks with respect to safety procedures and requirements specified to prevent contamination of the building or the employees. This includes a visual survey of the work area and the decontamination of the building or the employees. This includes a visual survey of the work area and the decontamination enclosure systems.

1.18 CONTRACTOR'S AIR SAMPLING RESPONSIBILITY

- A. The Contractor shall independently retain an air sampling professional to monitor airborne asbestos concentrations in the workers' breathing zone and to establish conditions and work procedures for maintaining compliance with OSHA Regulations 29 CFR 1910.1001 and 1926.1101.
- B. The Contractor's air sampling professional shall document all air sampling results and provide a report to the Consultant within 48 hours after sample collection.
- C. All air sampling shall be conducted in accordance with methods described in OSHA Standards 29 CFR 1910.1001 and 1926.1101.

1.19 PROPER WORKER PROTECTION

- A. This section describes the equipment and procedures required for protecting workers against asbestos contamination and other workplace hazards except for respiratory protection.
- B. All workers are to be accredited as Abatement Workers as required by the AHERA regulation 40 CFR 763 Appendix C to Subpart E, February 3, 1994.
- C. The Contractor is required to be certified and accredited as required by the State of Connecticut Department of Public Health.
- D. In accordance with 29 CFR 1926, all workers shall receive a training course covering the dangers inherent in handling asbestos, the dangers of breathing asbestos dust, proper work procedures, and proper worker protective measures. This course must include but is not limited to the following:
  1. Methods of recognizing asbestos
  2. Health effects associated with asbestos
  3. Relationship between smoking and asbestos in producing lung cancer
  4. Nature of operations that could result in exposure to asbestos
  5. Importance of and instruction in the use of necessary protective controls, practices and procedures to minimize exposure including:
    - a. Engineering controls
    - b. Work Practices
    - c. Respirators
    - d. Housekeeping procedures
    - e. Hygiene facilities
    - f. Protective clothing
    - g. Decontamination procedures
    - h. Emergency procedures
    - i. Waste disposal procedures
  6. Purpose, proper use, fitting, instructions, and limitations of respirators as required by 29 CFR 1910.134
  7. Appropriate work practices for the work
  8. Requirements of medical surveillance program

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9. Review of 29 CFR 1926
  10. Pressure Differential Systems
  11. Work practices including hands on or on job training
  12. Personal Decontamination procedures
  13. Air monitoring, personal and area
- E. The Contractor shall provide medical examinations for all workers who may encounter an airborne fiber level of 0.1 f/cc or greater for an 8 hour Time Weighted Average. In the absence of specific airborne fiber data provide medical examinations for all workers who will enter the Work Area for any reason. Examination shall, at a minimum, meet OSHA requirements as set forth in 29 CFR 1926 In addition, provide an evaluation of the individual's ability to work in environments capable of producing heat stress in the worker.
- F. Submit the following to the Consultant for review. The Contractor shall not start work until these submittals are returned with Consultant action stamp indicating that they are approved.
1. Submit copies of certificates from an EPA approved AHERA Abatement Workers course for each worker as evidence that each asbestos Abatement Worker is accredited as required by the AHERA Regulation 40 CFR 763 Appendix C to Subpart E, February 3, 1994.
  2. Submit evidence that the Contractor is certified to perform asbestos abatement work by the State of Connecticut Department of Public Health.
  3. Submit documents verifying that each worker has had a medical examination within the last 12 months as part of compliance with OSHA medical surveillance requirements. Submit, at a minimum, for each worker the following:
    - a. Name and Social Security Number
    - b. Physicians Written Opinion from examining physician including at a minimum the following:
      - 1) Whether worker has any detected medical conditions that would place the worker at an increased risk of material health impairment from exposure to asbestos.
      - 2) Any recommended limitations on the worker or on the use of personal protective equipment such as respirators.
      - 3) Statement that the worker has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.
  4. Copy of information that was provided to physician in compliance with 29 CFR 1926
  5. Statement that worker is able to wear and use the type of respiratory protection proposed for the project, and is able to work safely in an environment capable of producing heat stress in the worker.
  6. Effective June 4, 2000, submit copies of certificates for the site supervisor and the workers issued by CTDPH.
- G. Submit certification signed by an officer of the abatement-contracting firm and notarized that exposure measurements, medical surveillance, and worker training records are being kept in conformance with 29 CFR 1926.
- H. The Contractor shall maintain control of and be responsible for access to all work areas to ensure the following requirements:
1. Non-essential personnel are prohibited from entering the area
  2. All authorized personnel entering the work area shall read the "Worker Protection Procedures" which are posted at the entry points to the enclosure system, and shall be equipped with properly fitted respirators and protective clothing
  3. All personnel who are exiting from the decontamination enclosure system shall be properly decontaminated
  4. Asbestos waste that is taken out of the work area must be properly bagged and labeled in accordance with these specifications. The surface of the bags shall be decontaminated. Asbestos

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- leaving the enclosure system must be immediately transported off site or immediately placed in locked, posted temporary storage on site, and removed within 24 hours of the project conclusion.
5. Any material, equipment, or supplies that are brought out of the decontamination enclosure system shall be cleaned and decontaminated by wet cleaning and/or HEPA vacuuming of all surfaces.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.
- B. Damaged or deteriorating materials shall not be used and shall be removed from the premises. Material that becomes contaminated with asbestos shall be decontaminated or disposed of as asbestos waste.
- C. Polyethylene sheet in a roll size to minimize the frequency of joints shall be delivered to the job site with factory label indicating 4 or 6 mil.
- D. Polyethylene disposable bags shall be six mil with pertinent pre-printed label. Tie wraps for bags shall be plastic, five inches long (minimum), pointed and looped to secure filled plastic bags.
- E. Tape or adhesive spray will be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.
- F. Surfactant (wetting agent), shall consist of 50 percent polyoxyethylene ether and 50 percent polyoxyethylene ester, or equivalent, and shall be mixed with water to provide a concentration of one ounce surfactant to five gallons of water or as directed by manufacturer.
- G. Removal encapsulant shall be non-flammable factory prepared penetrating chemical encapsulant found acceptable to Consultant. Usage shall be in accordance with manufacturer's printed technical data.
- H. The Contractor shall have available spray equipment capable of mixing wetting agent with water and capable of generating sufficient pressure and volume and having sufficient hose length to reach all areas with asbestos.
- I. Impermeable containers are to be used to received and retain any asbestos containing or contaminated materials until disposal at an acceptable disposal site. The containers shall be labeled in accordance with OSHA Standard 29 CFR 1926.1101. Containers must be both air and watertight.
- J. Labels and signs, as required by OSHA Standard 29 CFR 1926.1101, will be used.
- K. Encapsulant shall be bridging or penetrating type which has been found acceptable to the Consultant. Usage shall be in accordance with manufacturer's printed technical data.
- L. HEPA filtered local exhaust ventilation shall be utilized during the installation of enclosures and supports where asbestos-containing materials may be disturbed.

### 2.2 TOOLS AND EQUIPMENT

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- A. The Contractor shall provide all tools and equipment necessary for asbestos removal, encapsulation and enclosure.
- B. The Contractor's air monitoring professional shall have air-monitoring equipment of type and quantity to monitor operations and conduct personnel exposure surveillance per OSHA requirements.
- C. The Contractor shall have available sufficient inventory or dated purchase orders for materials necessary for the job including protective clothing, respirators, filter cartridges, polyethylene sheeting of proper size and thickness, tape and air filters.
- D. The Contractor shall provide (as needed) temporary electrical power panels, electrical power cables, and electrical power sources (such as generators). Any electrical connection work affecting the building electrical power system shall be performed by a State of Connecticut licensed electrician.
- E. The Contractor shall have available shower stalls and plumbing to support same to include sufficient hose length and drain system or an acceptable alternate.
- F. Exhaust air filtration system units shall contain HEPA filter(s) capable of sufficient air exhaust to create negative pressure of -0.02 inches of water within enclosure with respect to outside area. Equipment shall be checked for proper operation by smoke tubes or differential pressure gauge before the start of each shift and at least twice during the shift. Adequate exhaust air shall be provided for a minimum of four air changes per hour within the enclosure. No air movement system or air filtering equipment shall discharge unfiltered air outside.
- G. Vacuum units, of suitable size and capacities for the project, shall have HEPA filter(s) capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 micrometers in diameter or larger.
- H. The Contractor will have reserve units so that the station system will operate continuously.

### PART 3 - EXECUTION

#### 3.1 PRE-ABATEMENT MEETING

- A. At least one week prior to the start of work a Pre-Construction Meeting will be scheduled and must be attended by the Contractor and any Sub Contractors. The assigned Contractor Site Supervisor is also required to attend this meeting.
- B. The contractor shall present a detailed project schedule and project submittals at the Pre Construction Meeting. Variations, amendments, and corrections to the presented schedule will be discussed, and the Owner and Consultant will inform the Contractor of any scheduling adjustments for this project.
- C. Following the Pre Construction Meeting, the Contractor shall submit a revised schedule (if needed) no later than one week after the meeting.

#### 3.2 WORK AREA PREPARATION

- A. Where necessary, shut down electrical power, including receptacles and light fixtures. Under no circumstances during the decontamination procedures will lighting fixtures be permitted to be operating when the spraying of amended water may contact the fixture. Provide GFCI devices, temporary power,

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and temporary lighting installed in compliance with the applicable electrical codes. All installations are to be made by a State of Connecticut licensed electrician.

- B. Shut down and/or isolate heating, cooling, and ventilation air systems or zones to prevent contamination and fiber dispersal to other areas of the structure. During the work, vents within the work area shall be “criticaled” with duct tape and polyethylene sheeting.
- C. The Contractor shall be responsible for removing furniture from the work areas. The Contractor shall pre-clean moveable objects within the proposed work areas using HEPA vacuum equipment and/or wet cleaning methods as appropriate and remove such objects from work areas to a temporary location. For example, cabinets to gain access to floor tile and associated mastic.
- D. Seal off all openings, including, but not limited to, windows, corridors, doorways, skylights, ducts, grills, diffusers, and any other penetration of the work areas, with polyethylene sheeting a minimum of six mils thick, sealed with duct tape. This includes doorways and corridors that will not be used for passage during work areas and occupied areas.
- E. Pre-clean fixed objects within the work areas, using HEPA vacuum equipment and/or wet cleaning methods as appropriate, and enclose with a minimum six mil plastic sheeting sealed with duct tape.
- F. Clean the proposed work areas using HEPA vacuum equipment or wet cleaning methods as appropriate. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters.
- G. After HEPA vacuum cleaning, cover fixed walls with two layers of four mil polyethylene sheeting to the floor level. Where fixed walls are not used, two layers of six mil polyethylene sheeting will be applied to a rigid framework of wood, metal, or PVC. Where floor tile/mastic is not being abated, cover the floor with two layers of six-mil polyethylene sheeting. All overlaps shall be sealed with tape or spray adhesive.
- H. Maintain emergency and fire exits from the work areas, or establish alternate exits satisfactory to fire officials.
- I. Clean and remove ceiling mounted objects, such as lights and other items not sealed off, which interfere with asbestos abatement. Use hand-held amended water spraying or HEPA vacuuming equipment during fixture removal to reduce settled fiber dispersal.
- J. Create pressure differential between work areas and uncontaminated areas by the use of acceptable negative air pressure equipment sufficient to provide four air changes per hour and create negative pressure of -0.02 inches of water within enclosure with respect to outside area as measured on a water gauge.

### 3.3 DECONTAMINATION SYSTEM

- A. The Contractor shall establish contiguous to the work area, a decontamination enclosure consisting of equipment room, shower room, and clean room in series. The only access between contaminated and uncontaminated areas shall be through this decontamination enclosure. If it is not feasible to set-up a contiguous decontamination unit, the Contractor shall establish a remote decontamination unit.
- B. Access between rooms in the decontamination system shall be through double flap curtain openings. The clean room, shower and equipment room within the decontamination enclosure, shall be completely sealed ensuring that the sole source of airflow through this area originates from uncontaminated areas outside the work area.

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- C. The Contractor shall establish contiguous with the work area an equipment decontamination enclosure consisting of two totally enclosed chambers divided by double flap curtained opening. This enclosure must be constructed so as to ensure no personnel enter or exit through this unit.
- D. Occupied areas and/or building space not within the work areas shall be separated from asbestos abatement work areas by means of airtight barriers.
- E. Construct the decontamination system with wood or metal framing, cover both sides with a double layer of six mil polyethylene sheeting, spray glued or taped at the joints.
- F. The Contractor and the Consultant shall visually inspect barrier several times daily to assure effective seal and the Contractor shall repair defects immediately.

3.4 ASBESTOS REMOVAL PROCEDURE - GENERAL

- A. The Contractor shall have a designated "competent person" on the job at all times to ensure establishment of a proper enclosure system and proper work practices throughout project.
- B. Abatement work will not commence until authorized by the Consultant.
- C. Spray asbestos materials with amended water using airless spray equipment or apply approved removal wetting agent to reduce the release of fibers during removal operation. The Consultant shall pre approve the use of amended water as the wetting agent.
- D. In order to maintain indoor asbestos concentrations to the minimum, the wet asbestos must be removed in manageable sections. Material drop shall not exceed eight feet. For heights up to 15 feet, provide inclined chutes or scaffolding to intercept drop.
- E. Remove asbestos containing materials as appropriate by standard methods. Fill disposal containers as removal proceeds; seal filled containers and clean containers before removal to equipment decontamination system. Wet clean each container thoroughly, double bag and apply caution label. Ensure that workers do not exit the work area thorough the equipment decontamination enclosure.
- F. After completion of stripping work, all surfaces from which asbestos has been removed shall be wet brushed, using a nylon brush, wet wiped, and sponged or cleaned by an equivalent method to remove all visible material (wire brushes are not permitted). During this work, the surfaces being cleaned shall be kept wet.
- G. Remove and containerize all visible accumulations of asbestos containing and/or asbestos contaminated debris. During cleanup, utilize brooms, rubber dustpan, and rubber squeegees to minimize damage to floor covering.
- H. Sealed disposal containers, and all equipment used in the work area, shall be included in the cleanup and shall be removed from work areas via the equipment decontamination enclosure at an appropriate time in the cleaning sequence. All asbestos waste in 6-mil polyethylene disposal bags shall be double bagged in the equipment decontamination enclosure before removal from the site.
- I. At any time during asbestos removal, should the Consultant suspect contamination of areas outside the work area(s), he shall cause all abatement work to stop until the Contractor takes steps to decontaminate these areas and eliminate the causes of such contamination. Unprotected individuals shall be prohibited from entering suspected contaminated areas until air sampling and visual inspections certify decontamination.

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- J. After completion of the initial final cleaning procedure including removal of the inner layers of polyethylene sheeting, but prior to encapsulation, a pre-sealant inspection shall be conducted by the Consultant. The pre-sealant inspection shall verify that ACM and residual dust has been removed from the work area.

**3.5 ASBESTOS REMOVAL PROCEDURES – FLOORING AND ASSOCIATED MASTIC/ADHESIVE**

- A. Prior to the removal of any flooring and associated mastic/adhesive, the Contractor shall ensure that work area preparation has been conducted in accordance with Section 3.2 and 3.3 of this Specification.
- B. The Contractor shall remove binding strips, all vinyl wall base, or other restrictive molding from doorways, walls, etc., clean and dispose of as non-asbestos waste. Dispose of any materials that have floor mastic on them as asbestos-containing waste. Note vinyl wall base and associated glue contains <50 ppm PCBs.
- C. The Contractor shall wet the floor with amended water or detergent solution, so that entire surface is wet. Do not allow to puddle or run off into other areas. If a detergent is used, use in strict accordance with manufacturer's instructions. Allow time for humidity and water or removal encapsulant to loosen tiles prior to removal.
- D. The Contractor shall keep floor continuously wet throughout removal operation.
- E. Remove flooring using a manual or powered spade, or stripping machine. Continuously mist floor in area where machine is working with amended water, removal encapsulant or detergent solution. Wet any debris generated as necessary to keep continuously wet. Keep floor where flooring has been removed continuously wet until after completion of heavy adhesive residue removal.
- F. Pick up flooring, stack, place in boxes or wrap in felt, and place in labeled disposal bags. At the Contractor's option, tiles may be placed directly into durable leak-tight containers.
- G. Following removal of flooring, there will be a layer (or layers) of adhesive remaining on the floor. The adhesive may be removed using shot/bead blast machines and/or chemical stripping agents. If chemical stripping agents is utilized, the Contractor must obtain the building owner's permission to use chemical stripping agents prior to use on-site.
- H. The Contractor shall leave the substrate in such a state as to comply with all requirements and recommendations of the manufacturer of replacement flooring.

**3.6 ASBESTOS REMOVAL PROCEDURES – INACCESSIBLE PIPE INSULATION AND DUCTWORK INSULATION**

- A. The Contractor shall perform selective demolition of walls, wet walls, and ceilings to assess the presence of inaccessible pipe insulation, pipe fitting insulation, and ductwork insulation. Perform selective demolition in a way that does not disturb asbestos containing materials.
- B. Once areas containing inaccessible piping and ductwork area opened up, the Consultant shall verify the presence or non-presence of asbestos containing materials.
- C. If asbestos containing materials are encountered, the Contractor shall ensure that work area preparation has been conducted in accordance with Section 3.2 and 3.3 of this Specification.

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- D. The Contractor shall wet the pipe insulation, pipe fitting insulation, or ductwork insulation with amended water or detergent solution, so that entire surface is wet. Do not allow to puddle or run off into other areas. If a detergent is used, use in strict accordance with manufacturer's instructions. Allow time for humidity and water or removal encapsulant to loosen pipe insulation, pipe fitting insulation, or ductwork insulation prior to removal.
- E. The Contractor shall keep materials continuously wet throughout removal operation.
- F. Remove materials using hand tools. Continuously mist the materials with amended water, removal encapsulant or detergent solution during removal. Wet any debris generated as necessary to keep continuously wet.
- G. Pick up materials and place in labeled disposal bags.

**3.7 ASBESTOS REMOVAL PROCEDURES - EXTERIOR WINDOWS SYSTEMS**

- A. Where necessary, shut down all electrical service to the building including receptacles and light fixtures.
- B. Seal off all openings, including but not limited to, interior of windows, wall, corridors, doorways, ducts, grills, diffusers, and any other penetrations of the work areas with polyethylene sheeting a minimum of six-mils thick sealed with duct tape. Place polyethylene sheeting on ground surfaces to protect against possible contamination during removal.
- C. Spray asbestos materials with amended water using airless spray equipment or apply an approved wetting agent to reduce the release of fibers during removal operations.
- D. Remove exterior asbestos-containing caulking and glazing compounds from window systems and place directly into durable leak-tight containers or in two six-mil polyethylene bags and properly label.
- E. Surrounding surfaces, such as exterior brick/block, canopy components, remaining window surfaces, shall be HEPA vacuumed and wet wiped to remove all visible dust and debris.
- F. Check all ground surfaces in work areas after removal is complete and the ground polyethylene drop cloths have been removed. Remove and dispose of any suspect asbestos containing materials discovered on ground.

**3.8 CONSULTANT**

- A. The Owner has retained Fuss & O'Neill EnviroScience, LLC as the Hazardous Materials Consultant for the purpose of project design, construction administration, and project monitoring during Asbestos Abatement. Mr. Kevin McCarthy (License #000274) of EnviroScience is the DPH-approved Asbestos Project Designer for this project.
- B. The Consultant will represent the Owner in all tasks of the abatement project at the discretion of the Owner. The Contractor will regard the Consultant's direction as authoritative and binding as provided herein, in matters particularly but not limited to approval of work areas, review of monitoring results, completion of the various segments of work, final completion of the abatement, submission of data, and daily field punch list items.

**3.9 CONSULTANT'S RESPONSIBILITIES**

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- A. Air sampling shall be conducted by the Consultant to ascertain the integrity of controls that protect the building from asbestos contamination. Independently, the Contractor shall monitor air quality within the work area to ascertain the protection of employees and to comply with OSHA regulations.
- B. The Consultant's air sampling professional shall collect and analyze air samples during two time periods:
  - 1. Abatement Period. If required, the Consultant's project monitor shall collect samples on a daily basis during the work period. A sufficient number of area samples shall be taken outside of the work area, at the exhaust of the negative pressure system, and outside of the building to judge the degree of cleanliness or contamination of the building during removal. Additional samples may be taken inside the work area and decontamination enclosure system, at the discretion of the project monitor.
  - 2. Post Abatement Period. If required, the Consultant's project monitor shall conduct air sampling following the final cleanup phase of the project, once the "no visible residue" criterion, as established by the project monitor, has been met. Five samples shall be collected inside the work area utilizing aggressive methods to comply with the CTDPH Standards for Asbestos Abatement, sections 19a 332a 12, and 19a 332a 13. Analysis of the samples to determine airborne concentrations of asbestos shall be conducted by Transmission Electron Microscopy (TEM) method with an average limit of 70.0 structures per square millimeter of filter surface or by Phase Contrast Microscopy (PCM) with a limit of 0.01 fibers per cubic centimeters of air in accordance with the above Connecticut regulation sections.
- C. The Consultant's project monitor shall provide continual evaluation of the air quality of the building during removal, using his/her best professional judgment in respect to the State of Connecticut Department of Public Health guideline of 0.010 fibers/cc and the background air quality established during the pre-abatement period.
- D. If the project monitor determines that the building air quality has become contaminated from the project, he/she shall immediately inform the Contractor to cease all removal operations and implement a work stoppage clean up procedure. The Contractor shall conduct a thorough cleanup of the areas of the building designated by the Consultant. No further removal work can take place until the project monitor has assessed that the building air has been decontaminated.
- E. Pre-abatement and abatement air samples shall be collected as required to obtain a volume of 1,200 liters. Samples shall be analyzed by Phase Contrast Microscopy (PCM) methodology using the NIOSH 7400 protocol.

**3.10 CONSULTANT'S INSPECTION RESPONSIBILITIES**

- A. Consultant shall conduct inspection throughout the progress of the abatement project. Inspections shall be conducted in order to document the progress of the abatement work as well as the procedures and practices employed by the abatement Contractor.
- B. The Consultant shall perform the following inspections during the course of abatement activities:
  - 1. Pre-commencement Inspection. Pre-commencement inspections shall be performed at the time requested by the abatement Contractor. The Consultant shall be informed 12 hours prior to the time the inspection is needed. If, during the course of the pre-commencement inspection, deficiencies are found, the Contractor shall perform the necessary adjustments in order to obtain compliance.
  - 2. Work Area Inspections. Work area inspections shall be conducted on a daily basis at the discretion of the Consultant. During the course of the work inspections, the Consultant shall observe the Contractor's removal procedures, verify barrier integrity, monitor negative air filtration devices, assess project progress, and inform the abatement Contractor of specific remedial activities if deficiencies are noted.

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3. Pre-sealant Inspection. The Consultant, upon the request of the abatement Contractor, shall conduct a pre-sealant inspection. The Consultant shall be informed 12 hours prior the time that the inspection is needed. The pre-sealant inspection shall be conducted after completion of the initial cleaning procedures, but prior to encapsulation. The pre-sealant inspection shall verify that all ACM and residual debris have been removed from the work area. If, during the course of the pre-sealant inspection, the Consultant identifies residual dust or debris, the Contractor shall comply with the request of the Consultant in order to render the area “dust free.”
4. Final Visual Inspection. The Consultant, upon request of the abatement Contractor, shall conduct a final visual inspection. Following the removal of the inner layer of polyethylene sheeting and prior to final air clearance, the Consultant shall conduct a final visual inspection inside the work area. If residual dust or debris is identified during the course of the final inspection, the Contractor shall comply with the request of the Consultant in order to render the area “dust free.”

3.11 CLEARANCE AIR TESTING

- A. After the visual inspection is completed and all surfaces in the abatement area have dried, final air clearance sampling shall be performed by the Consultant. Aggressive air monitoring will be used. Selection of location and of samples shall be the responsibility of the Consultant. Air monitoring volumes shall be sufficient to provide a detection limit of 0.010 f/cm<sup>3</sup> using NIOSH approved method for PCM analysis. For air clearance by Transmission Electron Microscopy, air-monitoring volumes shall be sufficient to provide a detection limit of 0.005 f/cm<sup>3</sup> using the AHERA Level II Yamate Method.
- B. Areas which do not comply with the Standard for Cleaning for Initial Clearance shall continue to be cleaned by and at the Contractor's expense until the specified Standard of Cleaning is achieved as evidenced by results of air testing as previously specified.

3.12 DISPOSAL OF ASBESTOS

- A. All disposal of asbestos-containing and/or asbestos contaminated material must be in compliance with requirements of and authorized by the office of Solid Waste Management, Department of Energy and Environmental Protection (DEEP) and State of Connecticut.
- B. Disposal approvals shall be obtained before commencing asbestos removal.
- C. A copy of approved disposal authorization shall be provided to the Owner and Consultant and any required federal, state, or local agencies.
- D. Copies of all Waste Shipment Records will be retained by the Consultant as part of the project file. The landfill operator on receipt will sign the receipts, and the quantity of asbestos debris leaving the job site and arriving at the landfill acknowledged.
- E. All asbestos debris shall be transported in covered, sealed vans, boxes, or dumpsters, which are physically isolated from the driver by an airtight barrier. All vehicles must be properly licensed to meet DOT requirements.
- F. Any vehicles used to store or transport ACM will either be removed from the property at night, or securely locked and posted to prevent disturbance.
- G. Any incident and/or accident that may result in spilling or exposure of asbestos waste outside the containment, on and off the school property and all related issues are the sole responsibility of the abatement contractor.

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END OF SECTION 02 82 00

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The following is a list of questions presented after walk through and reviewing the specifications:

1. In going through all on line specification documents the project technical specification table of contents lists the following:

**DIVISION 02 – EXISTING CONDITIONS**

024119 SELECTIVE DEMOLITION 6

028200 ASBESTOS ABATEMENT 19

028300 LEAD ABATEMENT 20

028510 MOLD REMEDIATION 10

*There is not a specification section for 028200 (Asbestos Abatement) or 028300 (Lead Abatement) and 028510 (Mold Remediation) there are however HM drawings 1-4. Will this specification sections be forthcoming? **F&O Response – Architect to provide specification sections.***

2. Looking at the Fuss & O'Neill Limited Hazardous Building Materials Inspection report dated May 2014 located in the Document from web page "Environmental Evaluation", Fuss & O'Neill did lead testing in every room using XRF (X-ray fluorescence) analyzer:  
*In regards to the basement storage room which is comprised of cinder block: the testing results show that only the B was over 1.0 mg/cm<sup>2</sup>. The HM drawing HM-01 has referenced field note # 10 (which indicates that the paint on the concrete block walls) must all the walls have the paint removed? The results for the other walls are as followed: Side A: 0.4/ Side C:-0.6/ Side D 0.2. In regards to the door which testing results showed 9.9 the casing and jamb both read as followed: Casing 0.1 & Jamb -0.2. My question is this on all other projects when the cost of the project exceeds \$25,000.00 then all lead work must be done by a lead contractor. By listing items that are not over 1.0mg/cm<sup>2</sup> then it negates having the GC being able to perform the selective demolition work or using the RRP. **F&O Response – Concrete Walls in storage room are considered lead coated. Work involving lead paint must be performed by a RRP Certified Lead-Safe Renovator. All workers and supervisors must have 8 hours of training and received certification as lead safe renovators. See Section 028300, 1.5(C) and 028300, 1.13(E).***
3. Again in looking at the lead XRF result sheets the HM-01 drawings field note #7 indicate that ALL the windows interior trim is to be removed and the windows in the Studio, laundry room all tested negative including the sash in the storage room. Can the field notes on HM-01 be adjusted to actually detail the lead work? **F&O Response – Interior window trims/sills are a mixture of lead coated and lead dust containing. All interior window trim and sills are considered lead containing and shall be removed and disposed of as required by the specifications and drawings.**
4. In looking at lead XRF reports for the second floor bedrooms and bathroom; Bedroom #2, Bedroom #3 and the bathroom windows and trim were all negative readings; however on HM-03 the same field note #7 exists on the sheet. Can the field notes on HM-03 be adjusted to actually detail the lead work? **F&O Response – Interior window trims/sills are a mixture of lead coated and lead dust containing. All interior window trim and sills are considered lead containing and shall be removed and disposed of as required by the specifications and drawings.**
5. In looking at lead XRF reports for the first floor again there appears to be the same field note #7 for all sides of the building on HM-02 in the first floor bedroom the sash is only positive trim negative; bathroom all window components are positive; kitchen window components all are negative; dining room the sash is only positive trim negative; living room the sash is only positive trim negative; bump out room no shots on those wood stained windows. **F&O Response – Interior window trims/sills are a mixture of lead coated and lead dust containing. All interior window trim and sills are considered lead containing and shall be removed and disposed of as required by the specifications and drawings.**
6. Will Fuss & O'Neill allow the sashes to be dismantled and all glazing compounds collected and bagged as asbestos waste and the wood framework disposed into dumpster to eliminate the high cost of dual waste stream of lead with asbestos content? Also they have the wording in field not #7 that interior wood would go out as dual waste can that remark be deleted? **F&O Response – Fuss & O'Neill is not opposed to this proposed means and methods.**
7. The asbestos inspection refers to 15 windows with caulking and glazing which would include all windows and 1<sup>st</sup> and 2<sup>nd</sup> floors; the report mentions just 1 basement window on Side C which is a metal frame window over the sink, are the other metal frame windows excluded from the basement? **F&O Response – Asbestos Abatement Specification 028200 calls for abatement of caulking and glazing from 19 windows throughout the structure.**
8. Will the DOH consultant perform the TCLP prior to project starting to determine the waste stream with the plaster, sheetrock, all non-lead painted materials to be demolished? **F&O Response – Lead Abatement Speciation 028300, 3.5 identifies**

*materials which are considered hazardous lead waste and require disposal. Testing of non-lead coated items such as plaster, sheetrock, etc. for disposal are the responsible of the contractor creating the waste.*

9. *The lead inspection report refers to Side B porch metal ceiling; that ceiling is a wainscoting ceiling is that a typo for the interim controls? F&O Response – Yes this appears to be a typo.*